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THE PATTERN OF CANADA'S POST-WAR GROWTH

J. W. WATSON*

The Fact of Growth.

TO most countries of the New World, growth is axiomatic. However, the story is by no means even; there are periods of quiescence and periods of accelerated growth. Canada is at present in one of these forward surges of activity and development. This is seen in the rapid growth of Canadian population, which has nearly tripled itself in the last fifty years (that is, well within a lifetime), and now stands at about 15 million. On the basis of this increase the Prime Minister has postulated a population of from 35 to 40 million within the next fifty years.¹

The rate of increase has been higher in the post-war period than before and now averages 2.1 per cent. per annum. This compares with a rate of increase of 0.44 per cent. in the United Kingdom; 1.14 per cent. in the U.S.S.R.; 1.36 per cent. in the United States; it is higher than the increases in East Asia that range from 1.25 in India to 1.99 in Korea; and is paralleled only by the rapid increase going on in the major Latin-American countries.

This high rate of increase is matched by the growth of investment and trade. Canadians are saving and investing more money than most nations and are also inviting investment from outside. In 1952, Canadians saved 8.3 per cent. of their income, as compared with 6.3 per cent. for the United States and 2.7 per cent. for Great Britain. In that year investments of over 5 billion dollars were made in Canada representing 22 per cent. of the national income. Investment in the United States, by comparison, was about 18 per cent.

The rise in the national product has also been very high. The value of the gross national product has gone up from \$12 billion in 1946, at the close of the war, to \$22 billion in 1952. Part of this is due to inflation, but, after making allowance for this, "the total volume shows a relatively steady gain of approximately 3 per cent. per year."²

The Nature of Growth.

The unusual acceleration of Canadian expansion is due to the merging of two trends, the growth in primary production, and the advance in industrialisation. The earlier peaks in Canadian development have been due to one or other of these, working to a certain extent separately. The surge of population from 1840-1895 was due

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¹ Address by the Rt. Hon. Louis S. St-Laurent at the Annual Meeting of the Canadian Federation of Agriculture, Montreal, January 22, 1952.

² *Canada, 1952, The Canada Handbook*, Dominion Bureau of Statistics, Department of Trade and Commerce, Ottawa, 1953, p. 128.

to the filling up of the east and its exploitation by farmers, fishermen, lumbermen and traders. Domestic industry was established but it was not very important. The advance between 1901-1913 resulted from the filling up of the west and the further growth of farming and lumbering.

Industrialisation began in the late nineties of the last century and overlapped the expansion due to primary production at the beginning of this century; but the main industrial growth occurred between 1914 and 1929, during and after the First World War.

To-day there is both widespread development in farming, lumbering and mining, and also a greater concentration of industrial activity in our major cities. And it is this double movement which is so significant. Thus between 1945 and 1953, agricultural production has gone up by 32·8 per cent., mining production by 42·2 per cent., and the development of forest products by 54·7 per cent. At the same time the value of industrial production has increased by 19·6 per cent. and the urban population in cities of over 100,000 has gone up by 20·4 per cent.

The Pattern of Growth.

The geographical expression of this growth is different from any preceding ones. Formerly, the eastern part of southern Canada developed first—up to 1881; then the western part, from 1881-1911; then the southern central portion forged ahead, particularly between 1914-1929. Overlapping the last two periods there was also a sporadic invasion of the north in the Peace River area and in the Clay Belt of Ontario and Quebec. Nothing like the present-day situation has occurred in which the whole of the habitable part of the country is developing. This is something unique in Canadian geography.

Within that total development, there are two areas that are particularly dynamic. One is the northern frontier, and the other is the string of metropolitan cities along the south.

The northern frontier is once more on the march. In British Columbia and the Prairies it consists of a shallow but wide penetration of hitherto inaccessible agricultural land. In Quebec and on the island of Newfoundland there is also an extension of the settled area, though only in salients here and there. For the greater part the advance north has abandoned any attempt at a uniform expansion but has proceeded, in leap-frog fashion, to leap well beyond the settled areas to isolated points of concentrated wealth in the Northern Cordilleras and Shield. This has been possible mainly through the use of airways, roads and tractor trails.

Agriculture.

It is not surprising that farming should once more be breaking new ground because of the world food shortage and the great demand for food. Also, the land hunger in Western Europe is as acute as ever. Population pressure in the world makes countries like Canada, with available unbroken land, continue to have significance. In 1931, the world population was estimated at 2,013,000,000; in 1951 it was

2,400,000,000, an increase of 387 millions in 20 years, or 19·35 millions per year.

Although one should not exaggerate the possibilities which Canada has to offer, since the hardships entailed in developing them are considerable and the risks imposed by climate are severe, nevertheless the country still does have wide areas of reasonably good land ready for settlement. Dr. E. S. Archibald of the Federal Department of Agriculture indicates that "there are about 130,000,000 acres of land in Canada still available for cultivation. In addition there may be nearly as much land which, while not suitable for cultivation, may be used in grazing."³ This would suggest a probable total of about 260,000,000 acres.

A regional breakdown in terms of acres available for occupancy would show: the Atlantic Provinces, 2,850,000; Quebec, 14,500,000; Ontario, 12,000,000; the Prairie Provinces, 84,500,000; British Columbia, 5,400,000; Yukon and N.W.T., 1,200,000.

Between the last two censuses (1941-1951) Canada had a net increase of 897,000 acres in the farm area. The Prairies increased the acreage under farming by 3,723,676 acres and British Columbia by 668,704 acres. The Central Provinces and the Maritimes saw a decrease of 3,994,480 acres, although production actually increased due to farm mechanisation, the use of fertilisers and more efficient farming methods.

A large part of the increase in the west is within the pre-war settled area and has been due to draining, taking in marginal land, irrigation and farm consolidation. However, important new advances have been made (see Fig. 1). These are particularly in the northern part of the interior plateau of British Columbia (Smithers and Williams Lakes), in the Pine Pass-Fort St. John region of the Peace district in British Columbia and the Hines Creek area of the Peace in Alberta. Agricultural expansion is active in Alberta north of the Athabasca River, between White Court and Grande Prairie. In Saskatchewan the areas around Big River and Prairie River are developing; in Manitoba, those on Birch River, Catfish Creek, Washow Bay and the Carrot River. Some interesting, though not very notable, advances have been made in the Keg River-Carcajou and lower Hay River regions of Alberta and the N.W.T., and between Whitehorse and Haines Junction, Yukon.

Despite the general decrease in the Central Provinces, local increases of importance are going on in Manitoulin Island, Ontario, and in the Temiskaming district of Quebec. The island of Newfoundland has seen quite an increase in the Humber Valley.

Most of these movements have been on to areas previously considered as marginal or inaccessible. They may have been marginal for the kinds of crops in vogue in pre-war times, but they are by no means marginal for seed varieties of grain and potatoes or for new varieties of wheat and oats developed by recent research. Moreover, the building

³ E. S. Archibald, "Cropping systems as an aid to sustained production," *Transactions of the United Nations Scientific Conference*, Lake Success, 1949, vol. 4

of strategic roads into the north like the Alaska Highway, or of roads to tap mineral resources like the Mackenzie Highway, has greatly stimulated agriculture by opening up inaccessible areas. It is therefore expected that the farm area will continue to expand, especially in northern British Columbia and northern Alberta.

Lumbering.

Not only is farming pushing north, but lumbering is. Again this is attributable in part to the world shortage of wood products which has provided a new incentive for expansion. Northward expansion has been assisted by depletion in some areas in the south and their replacement by rock barrens on hilly areas, or by farming in alluvial valley terraces.

New lumbering areas are being developed chiefly in the interior valleys of northern British Columbia and in the forest fringe of the Prairies (see Fig. 2). Worthy of mention are developments round Williams Lake, British Columbia, in the Swan Hills of Alberta, in the Cumberland House-Doré region of Saskatchewan and in the Moose Lake-Wabowden areas of Manitoba. In the east the chief new lumbering area is in the northern part of the island of Newfoundland.

Once again, the location of these advances is partly linked with the new roads opened up for mineral developments and with the markets which the northern mines are supplying. In the latter case, it is interesting to note that the rapidly developing mining region of Lake Athabasca is getting much of its wood from the forests of the lower Peace River.

Mining.

Important as is the growth in agriculture and lumbering, it is dwarfed by that in the extraction of fuels and in mining. Agriculture had its heyday in the seventies of the last century in the east and in the early decades of this century in the west. But while the procurement of oil and natural gas and the mining of minerals went on then, they were not very significant. Their big development came with the war and after. Thus while agriculture declined after 1929 (a pre-war peak of development) in its share of the national income, mining increased. In 1941, at the beginning of the Second World War, the mining industry of Canada produced \$500 million worth; in 1951, it had leapt to over \$1,000 million and in 1953, it was about \$1,500 million. Again, since the value of the dollar itself has shrunk, this is not an absolute measure. Yet when we look at the physical volume, the growth is still very remarkable. Taking the 1935-39 average as 100, the physical volume of output had risen to about 150 by 1951 and is now 174.

To a geographer, the pattern of development due to mining is most significant because it has begun to fill up the Shield and invade the Appalachians and the Cordilleras in such a way as to turn these one-time barriers into bridges in Canadian development (see Fig. 3).

Professor Trotter once wrote about the barrier of the Appalachians

in Canadian history ;⁴ but when those Appalachians began to be mined in the Eastern Townships, the Gaspé and New Brunswick, they created a community of interests between the areas they had formerly divided. The continuation and acceleration of this trend should play a great part in cementing the flanking regions together. Thus the development at Bathurst, N.B., may eventually use the hydro-electric power brought from the Manicougan River, P.Q., under the St. Lawrence estuary to Gaspé. This would help to make Quebec and the Maritimes dependent on each other in yet another way.

Dr. E. L. Bruce pointed out⁵ that the Canadian Shield which was once thought of as a barrier, separating Eastern from Western Canada, has now become a link joining them together. The mining communities of the north draw most of their construction timber, their flour and meat from British Columbia and the Prairies, and most of their dairy goods and fruit, their clothing and, above all, their machinery from Ontario, Quebec and the Maritimes. Thus they act as a powerful force to draw the economies of west and east together. The same could be said of the mines of the Cordilleras, that draw upon goods from the Coast and from the Prairies, helping to unite those strongly separated areas.

Consequently, as the mining industry grows it should act as one of the most powerful unifying forces of the country. Moreover, since that growth is mostly in the north, it pulls Canada towards the north ; it gives the north a vital role in making Canada a distinct entity. For a very long time the parts of Canada have been considered, geographically, as but extensions of American regions ; the Maritimes as but the extension of New England ; the St. Lawrence Lowlands as that of the Central Lowlands of America ; the Prairies as that of the Great Plains or High Plains of America ; and British Columbia as that of the Highland and Pacific States of the U.S.A. But in the Shield, Canada has something distinctive ; something to all intents and purposes its own. And as the Shield changes from being a negative area in Canadian life, to becoming a very positive one, it may well be regarded as the Canadian heartland, giving Canada its true significance as a separate country. Since the bulk of this heartland lies to the north, its pull upon the nation will help to balance that pull to the south which has been apparent in its history heretofore.

The fact is, as long as development was mainly in terms of home-steading or raising cash crops for export, the south was bound to be envied and to exert a great pull because of its wide lowlands, rich soil and warm climate. It is no wonder that most European emigrants in the earlier days made for the United States. There the central plains, deep in fertile soils, form the core of the country. Indeed, the contrast between the United States, with soil at its heart and Canada, with

⁴ R. G. Trotter, "The Appalachian Barrier in Canadian History," *Canadian Historical Association, Report of Annual Meeting, May, 1939*, Univ. of Toronto Press, Toronto.

⁵ E. L. Bruce, "The Canadian Shield and Its Geographic Effects," *The Geographical Journal*, vol. xciii, 1939, p. 238.



Fig. 1.

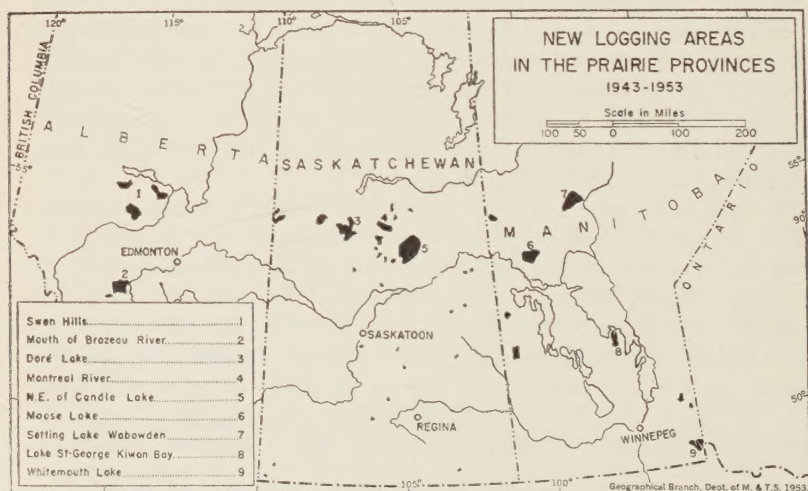


Fig. 2.



Fig. 3.

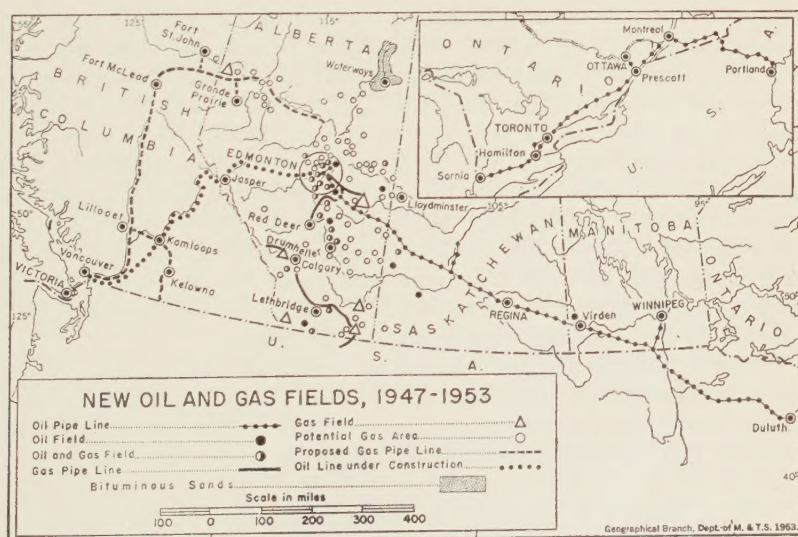


Fig. 4.

rock at its heart, was not too encouraging for the northern country. It undoubtedly was one of the reasons, if not the main reason, why the United States filled up much more than Canada.

But when development became possible in terms of water power, lumbering and mining, instead of farming, the Shield and the marginal mountains, began to play such an important part in the Canadian economy, that finally, the United States started to look to Canada; the wheel had come fully round. For the truth is, as the Paley report indicates,⁶ the United States is now short of many of the minerals and other commodities, fundamental to modern industry, that are found in Shield areas or in the intruded rocks within fold mountain systems. Consequently it is Canada that is now to be envied. Having been slow to develop up to the present has given it a chance to advance more rapidly now that its resources have become so opportune.

The great growth in the mining industry has been, or will be, mainly in the north-western and north-eastern sections of the Canadian Shield; from Lynn Lake through to Great Bear Lake, on the one hand, and from Knob Lake to Diana Bay, on the other. In the north-western section the principal developments or potential developments are nickel and copper at Mystery Lake and Lynn Lake in northern Manitoba and at Ferguson Lake, west of Rankin Inlet, in the District of Keewatin; lead and zinc at Pine Point, just west of the edge of the Shield on Great Slave Lake; gold at Yellowknife, north of Great Slave Lake; and uranium at Uranium City and Beaverlodge, Lake Athabasca, and at Pt. Radium, Great Bear Lake. The Labrador prospects are mostly at Knob Lake at the southern end of the Labrador trough and in the Leaf Lake vicinity at the northern end.

Most of these mines are sufficiently far north to experience sub-arctic and even arctic conditions, including permafrost, extremely low winter temperatures, a long winter, difficulty of access at break-up and freeze-up, lack of a local food supply and the difficulty of laying in water and sewage at the camp-sites. The health and morale of the workers are other typical problems to be considered. The mines have to supply many services, pay high wages, stockpile machinery and spare parts and also stockpile the ore that is mined, and these things make costs very high. They can only operate, therefore, in a high-price market. At present, world demand has sent prices up to where it is economical to write down the hazards of the north, and this is why Canadian mining is able to look to the north for the first time, on a reasonably big scale and with reasonable prospects.

Also important are the mines and potential mining areas in the northern Cordilleras. Lead and silver in the Mayo Landing-Keno Hill area of the Yukon (extraction has been expanded since the war), and at Torbrit, B.C., are valuable additions, together with nickel and copper

⁶ W. S. Paley, *et al*, *Report of the President's Materials Policy Commission*, U.S. Government Printing Office, Washington, 1952, vol. 2, *The Outlook for Key Commodities*.

near Kluane, Yukon; lead, zinc and copper at Tulsequah, B.C., asbestos at McDame, B.C.; and tungsten at New Hazelton, B.C.

Although the greater part of our mining has been in the north, important developments have occurred since the end of the war around the southern edge of the Shield in Ontario, and also in the Appalachians in Quebec, New Brunswick and Newfoundland. The development of the Steep Rock iron during the war has proceeded apace, as has the revivification of iron mining near Michipicoten; new iron fields, of a smaller but none the less significant size, have opened up at Marmora, Fort Coulonge and Calabogie in the Ottawa Valley.

Copper and nickel mines have sprung up since the war in the Eastern Townships and Gaspè on the northern slopes of the Appalachians, while copper, lead and zinc in considerable quantity have been discovered at Bathurst, N.B. The developments at Buchans, Nfld., have been much accelerated since the war.

Oil Production.

Although Canada is a fuel-rich country it has long relied on imports of coal and oil. This has been because the Central Provinces, which are the chief users of fuel, are remote from Nova Scotia and Alberta, the chief suppliers. Ontario and Quebec are much nearer to the American coal and oil fields of Pennsylvania, West Virginia, Ohio, Illinois, etc.

The discovery of much larger reserves of oil than had been anticipated in pre-war years in Alberta, British Columbia and Saskatchewan, together with truly considerable quantities of natural gas, made it feasible to construct oil and gas pipelines, and to distribute the western supply to the Central Provinces in an economic way (see Fig. 4).

Prior to the war the chief oil development was in the Turner Valley, Alberta, with a minor centre at Norman Wells, N.W.T. The Canadian reserves were thought to be quite low, about 50 million barrels. Turner Valley reached a peak of production in 1942 of 29,000 barrels a day, but this was not even sufficient to supply the Prairies.

In 1944, oil was discovered in the Devonian rocks for the first time in Alberta and a new lease on life was promised for the oil industry. The Devonian was found to have several important oil-bearing coral reefs, and between 1947 and 1952, significant reefs have been discovered and developed at Leduc, Redwater, Lloydminster and Coleville. Subsequent discoveries of oil in southern Saskatchewan and south-west Manitoba made it evident that these areas were on the edge of the Williston basin of North Dakota. Thus quite a widespread source area of oil was located both north of Turner Valley to the Edmonton region and east to the Williston basin.

On the whole, however, it is the northern development which is more important and which promises greater opportunity for the future. Already oil has been discovered and worked in the Peace River region while porous, bituminous limestones of Devonian age both south and north of Great Slave Lake are attracting current exploration. Indeed,

in the last two years over 30 million acres of land have been leased to oil companies in the North-west Territories, between the oily limestones south of Great Slave and those as far north as Wrigley; and in the Peel plateau of the Yukon. When we remember the enormous reserves of oil in the Athabasca tar sands, it would seem as if oil development will be another strong force pulling Canada north.

In 1952, Alberta's oil production went over the 50 million barrels that was supposed to be Canada's reserve in pre-war years. Alberta's proven reserves are now computed by the Canadian Petroleum Association as being nearly 2,300 million barrels, or more than those of Oklahoma and next to those of Louisiana, California and Texas.

Hydro-Electric Power.

Another very important development pulling Canada north is the development of its water-power resources. This development is also, in the main, a recent one (see Fig. 5).

Southern Canada seemed so well supplied with water power, particularly in the Great Lakes-St. Lawrence region, in the Appalachians and the Southern Rockies, that the vast untapped reserves of the north long remained untapped. However, with Canada's lack of conveniently accessible fuels, there was an unusually heavy reliance on hydro-electric power and, at least in Ontario and Quebec, the readily available power from Niagara Falls, the Beauharnois Rapids, and the power sites along the edge of the Shield in the Ottawa and St. Maurice Valleys soon became used up. It also became more costly, as more and more subsidiary dams and stations had to be built, to develop more power.

Therefore industries anxious to use huge quantities of cheap power, particularly the electro-metallurgical ones, had to look further afield. The history of the expansion of the Aluminum Company of Canada is a good example.⁷ When it first developed power at Shawinigan Falls on the St. Maurice River, there seemed to be an adequate supply, close to Montreal and not far from Toronto, ready markets for the finished product. But the tremendous development of power-using industries in these metropolitan districts soon made Shawinigan inadequate. Competition for power increased to such an extent that the Aluminum Company chose to develop a new site at Arvida on the Saguenay, well removed from the industrial heartland. Here big quantities of cheap power were soon released. Yet they, too, were soon being fully utilised. Consequently the company turned to the northern part of the British Columbian mountains for a truly adequate supply and started yet a third development at Kitimat.

This is a tremendous undertaking, which has involved the damming up of the Nechako River at its eastern outlet; the filling up of its lakes to a much higher level; their diversion to the west through a tunnel in the Coast Range; and the development of hydro-electric

⁷ B. J. McGuire and H. E. Freeman, "How the Saguenay River Serves Canada: The Manufacture of Aluminum," *Can. Geog. Journal*, Nov., 1947, pp. 200-225.



Fig 3.

power on the Pacific Coast. This power is then sent to nearby Kitimat, where the smelter and settlement are located.

Ventures Limited propose a still larger development (4,300,000 h.p.) in the Yukon in order to smelt ores not only from the Yukon and Alaska districts but from New Caledonia and Celebes across the Pacific. Reversing the flow of the Teslin-Atlin drainage in the interior plateau of Yukon down to L. Atlin, cutting a tunnel thence to L. Sloko across the Coast Range and developing power in the Taku River, the company intends to build a smelter at Tulsequah which may turn that little Indian village into a thriving city. Vast quantities of cheap power are thus a localising factor of prime importance in the modern metallurgical industry and attract the movement of raw materials from great distances. They will help to locate developments in the north.

Transportation.

These widespread developments in the north are peculiarly dependent on transportation. In many cases, as to Labrador and Lynn Lake, railways are being built which are strictly for mining and will have little other use. Similarly the Chibougamou, Mackenzie and

Hart Highways pass through considerable areas of unused or unusable land in order to serve the mixed needs of special regions. Many of the airlines, too, as into Great Bear Lake, are developed mainly, if not solely, for the outlying community, and do little by way of a pick-up trade there and back. So, too, the shipping routes to Ungava Bay, Rankin Inlet, Kitimat and the Ventures' Yukon project will be to serve restricted interests.

So far, it is only when a prospect has been able to afford having a special railway, road, etc., built for it, that, in many cases, it has had a chance to develop. (This is not so in southern Canada, where operations so often use pre-existing transportation routes shared by many other concerns). Notwithstanding this limitation, northern transportation is going ahead, particularly in road building and the development of freight airways.

Frontier and Metropolis.

The expansion which has begun in the north, great as it is, and as it may continue to be, will probably not amount to very much in terms of population. The Labrador iron development may throw up two or three mining towns of 3,000 to 4,000 together with a city of probably 10,000 at Sept Iles, the outlet port. Atikokan, the townsite for the Steep Rock mines, postulates an expansion of up to 16,000. The camps in the north-west will probably be smaller. Those at Mystery Lake and Lynn Lake, at Uranium City and Beaverlodge, Ferguson Lake and Rankin Inlet between 1,000 and 3,000: at Pine Point, possibly 4,000; at New Hazelton and Torbrit, McDame and Tulsequah less than 1,000 each; with about that amount for Klwane and Stewart River, Yukon. Together, with lesser centres, this would total 75,000 at most.

The figure of 50,000 has been mentioned for Kitimat, and the Ventures' project in the Yukon will stimulate that area—a city of 20,000 is at present contemplated: but the total in the mining and smelting centres is not likely to be more than 150,000.

Add to these figures the movement of farmers and lumbermen north, in scattered areas from northern British Columbia to Newfoundland, and perhaps another 100,000 could be accounted for. (It is to be remembered that large-scale production on fairly large farms and big lumber camps does not make for the dense settlement of the newly taken land).

But this postulated quarter of a million people in the north will have, nevertheless, a very great influence, because of their very high *per capita* production, their great use of machinery, their reliance on special lines and means of transportation and their inability to get either their food or their equipment or both from their immediate surroundings. In other words, though small in numbers, these people will have a high purchasing power with their high productive capacity. Consequently they will quicken the whole Canadian economy.

In particular, they will greatly activate the few metropolitan centres

that are already serving them. One is struck, in Canada, by the rôle of these centres in the economic development of the country. Although many new towns spring up and a certain spread of industry is noticed, the main centres have expanded even more and have led to a further concentration of population and industry than ever. This was certainly a main point of Professor Putnam's recent paper on trends and problems in Canada. As he points out, "Canada is becoming a land of cities. In 1951, 30 per cent. of the total population was found to be collected in seven cities of over 250,000. Most significant is the fact that the two largest cities, Montreal and Toronto, held over 2,500,000 people. At each of the last two censuses they had almost 18 per cent. of the country's population and they show no sign of slackening their rate of growth . . . Other existing cities are expanding enormously. Quebec, Ottawa, Hamilton, Winnipeg and Vancouver appear to be pointed toward the million mark," (by the end of the century).⁸

Although this concentration at the metropoli results from the general expansion of the country, it bears a special relationship to northern expansion. For the north can, in the main, be developed successfully only through a few gateways, commanding a few channels. Economy of approach is fundamental. If there were a great number of roads, railways and airways, none of them could be used sufficiently to be used profitably. Therefore, there will be a marked tendency for the Newfoundland and Labrador developments to rely on Montreal; for those in Lake Athabasca, Great Slave and Great Bear Lakes to rely on Edmonton and Vancouver; and for those in northern British Columbia and the Yukon to rely on Vancouver. Meantime the needs for specialised equipment, capital, management and so forth across the whole north will depend heavily on the Montreal-Toronto-Hamilton-Windsor industrial belt.

There is thus a process of mutual stimulation going on, between the north and the south, which is most noticeable at the metropolitan centres.

Conclusion.

From this brief résumé of events, it would seem that there is a new forward movement in the Canadian economy; it is new in that it is nation-wide, for the first time; it is also new in that it combines the two great streams of former development, primary production and industrialisation, into one advance. It results, basically, from a new situation in the continent in which the United States finds itself looking to Canada as the heartland of mineral and power resources for the future. The new geographical expression of this is the appreciable movement of the frontier north and the penetration of the north at isolated points of great promise. This has, at the same time, assisted in the quickening of the historic centres of settlement and has accentuated the relatively new concentration of activity and population at metropolitan centres.

⁸ D. F. Putnam, "Trends and Problems: A Canadian Point of View." *The Canadian Geographer*, No. 2, 1952 pp. 5-6.

THE TOWN OF ALICE, CAPE PROVINCE

N. C. POLLOCK*

THE sound of singing, the shuffle of bare feet, the swinging of long, dust-coloured garments or patched trousers, the flashing of mirrors used as ornaments, the twanging of a primitive guitar or a mouth organ herald yet another party of native men and women walking along the dusty road leading into Alice, the administrative centre of the district of Victoria East and a small town noted for its missionary institutions at Lovedale and Fort Hare, now a University College for non-European students. Alice is a small town, 20 miles south of the Amatola mountains, an outlier of the Great Escarpment. Their blue undulations rise about 4,000 ft. above the 2,000 ft. plateau on which Alice is situated. The steep southward facing escarpment, with its plainly marked horizontal bands of old sedimentary rock and the tent-shaped peaks capped with sills of hard dolerite, is clothed with swathes of dark green, evidence of indigenous evergreen forests and pine plantations.

The mountains receive a fairly heavy rainfall of about 50 inches per year, which supports this luxuriant vegetation and which feeds the perennial river, the Tyumie, in whose valley the Xhosa tribes originally made their home. Gaika's Kop, the most prominent peak on the horizon, is a reminder of the chief Gaika, who ruled over them at the end of the 18th century. Brown hills surround the town, which lies in a hollow, brown for much of the year, but often green in summer when the rains have been abundant. The rainfall here is far lower than on the mountains, and has dropped to an average of about 20 inches per year with a summer maximum. Factors of high summer heat and evaporation, and the uncertain régime of convectional rainfall, cause this change in vegetation from the forest to thorn trees, scrub and a sparse covering of grass. The nature of this vegetation varies considerably here according to whether the land is native or European owned. The native reserves are found both east and west of Alice with a belt of Europeans in between, and the bare hills of the reserves reveal numerous signs of donga erosion.

Saturday is a busy day in Alice and crowds of brightly dressed natives come in from the surrounding countryside to buy food, trinkets and household articles such as blankets. The women have a graceful carriage, which comes of carrying everything from jars of water to suitcases on their heads. They may be dressed in primitive blanket-like clothes, long black ruffle dresses, reminiscent of the Victorian era, or bright modern European dresses. The reddish-brown clothes worn by the more primitive women are not really blankets,

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but heavy cotton sheeting dyed a colour the wearer fancies. Colour fashions vary and in some parts of the Transkei may change from brown or red to blue in a particular year. This sheeting, usually rust-coloured here, is made into a long skirt which is ankle length. Shoulders and breast may be bare, but are often covered. Small children or piccanins are tied to the mother's back by means of a fold of the cotton, or by a shawl. They are carried like this for miles and the mother may even work in the fields with a baby on her back. Usually the women of the party are carrying something on their heads or in their hands, while the men stalk on unconcerned with loads, and carrying only a stick or knobkerrie.

The men dress almost entirely in European clothes which they have modified in many cases, under the influence of the mines or the dictates of American fashion. Those young men who have worked on the mines wear trousers belted up at the ankle like an English farm labourer's, white or khaki shirts and cloth caps. They sport numerous ornaments such as claspknives, whistles, small round mirrors and beads, slung on an apron at the front and touched off by a beautifully worked bead belt. These young men may dance along the road jingling their finery, chanting and performing an imaginary war dance. The more sophisticated, and those who have worked in the towns, may sport the American type of zoot-suit with padded shoulders and narrow trousers revealing brightly coloured socks.

The main square of Alice is an animated scene with these cheerful people talking in loud tones or calling to each other, typical of peasants throughout the world. It is a large open space formerly used as an outspan for waggons, which needed a large turning area, and now converted into attractive gardens with a fountain, rose arbour and bowling green. The main shops of the town, some nine in number, the banks, town hall, and municipal offices, the divisional council office, the magistrate's court and administrative offices of the Native Affairs Department and post office all front on the main square. The shops in Alice stock a very wide range of goods from screws and pins to clothing and groceries, like an English village shop. They cater for the small European population of less than a thousand and a large rural native population of nearly 20,000. The nearest towns of any size are 40-50 miles away, and Alice is thus the market for a wide rural area. The range of goods offered is limited to a certain extent by the conservative taste and low purchasing power of the native population, e.g. cheap cotton prints, blankets, iron bedsteads and paraffin lamps.

Wide verandahs shade shoppers and idlers from the hot African sun. Most buildings are single storied, sprawling out over a large area. The interiors of the shops are cool and cavernous with long counters and shelves crammed with an assorted display of brightly coloured goods for the native trade. The local Bantu language is Xhosa, pleasant sounding and punctuated periodically with clicks derived from Hottentot and Bushman sources. English is also spoken

by many of the local natives. Both languages may thus be heard at the counters, in a babel of noise, as the natives push courteously around after their purchases. The café on a busy corner is a popular place for students and peasants.

By midday the throngs of gaily dressed natives have begun their long homeward trek, while others have climbed on to the local "bus," a converted lorry not unlike the "mammy wagon" of West Africa. This roars out of the town towards the mountains, filled to overflowing with goods and passengers. By 1 p.m. the town is deserted and begins to sink into its weekend of complacent quietude. Only a few stragglers are left congregating round the café which never seems to close, and gazing at the windows filled with fruit, cheap American magazines and bric-a-brac.

There is time now to walk round and examine the town after the morning pageant has faded. Like many South African towns it sprawls out over a large area with a typical grid-iron pattern of streets, each house having a large garden. In contrast to the bare hills encircling the town, the streets are liberally lined with trees, and after a period of drought the town looks like an oasis which spreads out over the hills after rain. To the north, the great Presbyterian missionary institution of Lovedale is anchored by a tree line to the town of Alice, while to the east the University College of Fort Hare stands out boldly and appropriately on a hill formerly occupied by the frontier fort of the same name.

A hundred years ago and more this area formed the border between the warlike pastoral Bantu and the northward moving Europeans. It was a region of recurring frontier wars, and, after a long series of such wars, Fort Hare was established in 1847 as a centre for future operations against the Xhosa. It was situated on a shaly hill overlooking and commanding the Tyumie valley, then the boundary between Bantu and European. It was more of a palisaded enclosure than a fort, some 600 by 250 yards in extent and housing a battalion of infantry and a squadron of cavalry. There were the usual mess establishments, store rooms, hospitals, stables, magazines, numerous huts for the men, and other necessary buildings and offices. The fort continued in use until 1883.

The village of Alice came into existence after Fort Hare was built. The majority of these frontier villages originated in a similar manner. Tradesmen and artisans gathered round the fort which was the nucleus. At first the huts were of temporary nature of wattle and daub, but, if the site proved to be a good one, they were soon replaced by more substantial dwellings of brick and stone. In 1852, a municipality was created. In 1856, the village of Alice appears to have covered much the same ground as now, the building being mainly wattle and daub huts of 2-3 rooms occupied by discharged soldiers. Shops and inns were built to serve the garrison of Fort Hare, consisting of about 700 men. The Victoria Hotel serving both the soldiery and the waggon traffic to the interior was established next to the "King" ford across

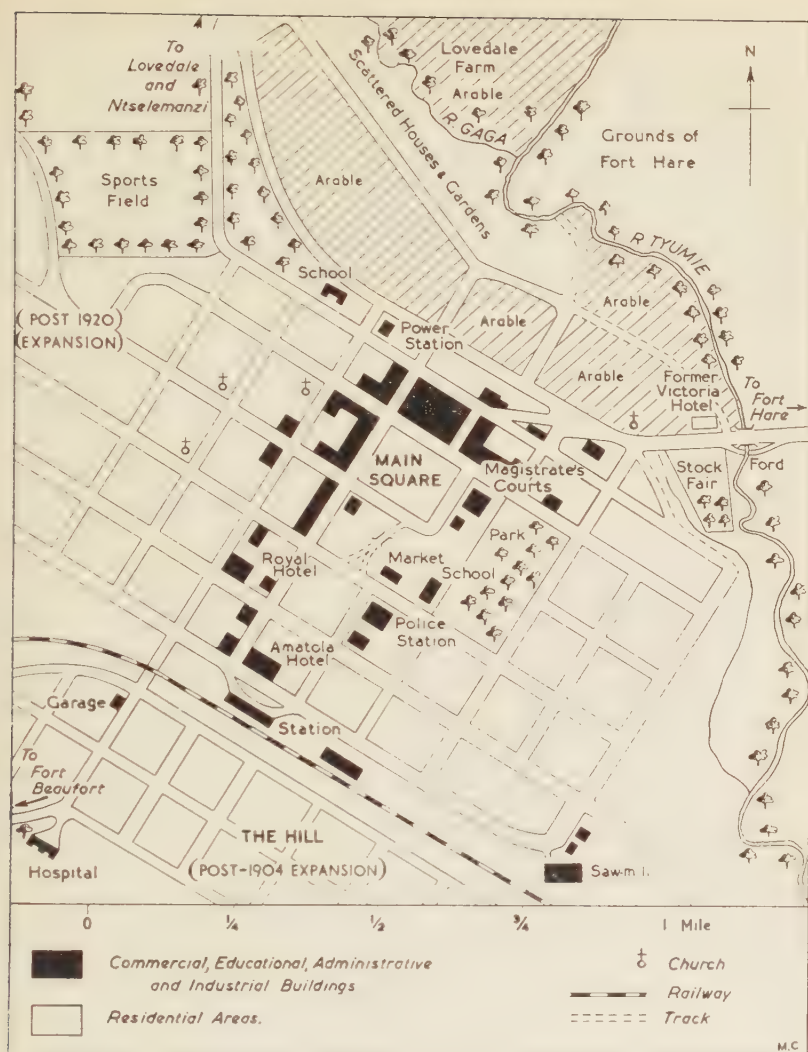


Fig. 1.—Plan of Alice.

the river. A great event was the visit of Prince Alfred to the village in the 1860's; the Royal Hotel was named after this event.

Most of the town developed on a river terrace about a quarter-mile from the river and some 20 ft. above the flood channel of the Tyumie which used to form a vlei below the present stock fair grounds. The original native name for Alice was Edikeni meaning a pond or vlei. The town developed round the square, later expanding north to Fort Thomson, a small frontier fort, and to Bain's former farm. Andrew Geddes Bain, a roadmaker and geologist of note, was in charge of Fort Thomson in 1835 and was granted a farm of about 6,500 acres which had to be given up after a year due to changed frontier policy. The next stage in the development was marked by

the railway (derisively known as the "Pumpkin" railway, as it was thought originally that this branch line would only carry pumpkins) which reached Alice in 1904. The railway provided a link via Cookhouse between the two main lines from East London and Port Elizabeth into the interior. Houses were built on the western hill which developed into a residential area. The Amatola hotel was built after this because of the railway traffic, and the importance of the Victoria hotel began to decline.

From 1920 onwards development was very slow due to lack of manufacturing industries, and indeed, throughout its one hundred years of existence, the European population of Alice has increased only slightly (391 Europeans in 1875 and 750 in 1950). Even so, this increase, due mainly to the presence of Fort Hare and Lovedale, contrasts with the cases of other Eastern Province towns such as Tarkastad, Peddie and Seymour where the population has actually decreased since 1921 because of general urban drift.

The historical reasons for the development of Alice have been mentioned, and if we climb the even crestline of plateau-like hills, probably part of the old Miocene plateau, that surrounds the Alice Basin we shall observe the geographical reasons for the origin of the town. It is situated on the perennial Tyumie which supplies abundant water, an important point as the country to the south becomes increasingly arid and most of the Tyumie tributaries are intermittent. It is also located next to a suitable ford across the river and on high ground away from possible flooding. It commands the entrance to the upper Tyumie valley with routes going north and northwest across the Amatolas and Winterberg via Hogsback and Katberg passes. Situated south of the east-west trending Winterberg-Amatola mountains, Alice also controls the east-west routes below the mountains, routes leading from the coast, particularly East London, to the interior, via the Cookhouse gap. To the south a suitable ford across the Greatfish river brings one to Grahamstown about 60 miles away. Alice is thus an important route centre with one east-west railway line, and good roads leading to the interior and to the coast. Alice is also a market and regional centre of considerable importance with a wide sphere of influence and catering for a total rural population of over 20,000 people, while as administrative centre of the district of Victoria East it holds the offices of the Native Commissioner. Reference has already been made to its significance as a centre of native education.

The European residential area with tarred tree-lined streets, electric light, piped water supply and other urban amenities, provides a striking contrast to the "location" areas where coloured and native urban inhabitants live. The majority of the coloured community is housed in a sub-economic housing estate of some 24 houses on the western hill, apart from the European residential area. Overcrowding is rife, as over 200 people live in these tiny 2-3 roomed houses. The rest of the urban community of 365 lives in houses and shacks in the European area of the town. A recent survey carried

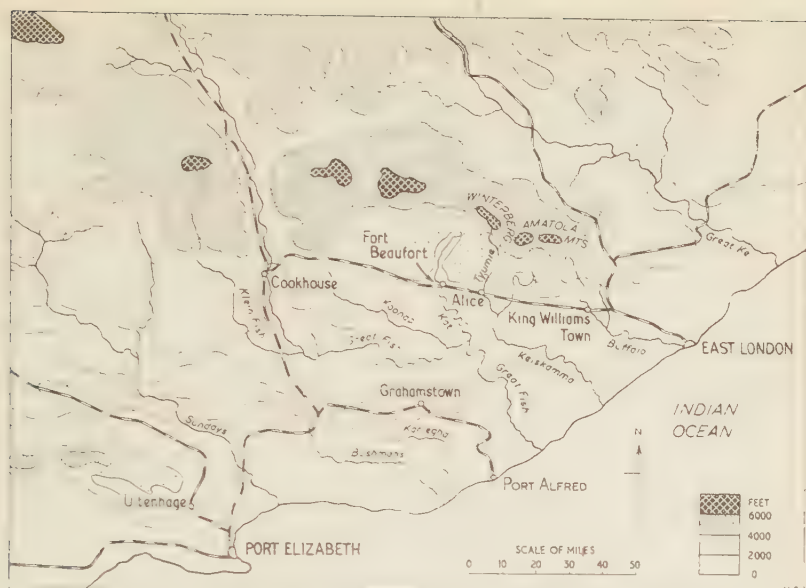


Fig. 2.—Part of the East Cape Province, Union of South Africa.

out among coloured wage earners reveals a very low standard of living, the average wage being only about £1 10s. a week.

The native urban community lives mainly in the location of Ntselemanzi on the eastern slopes of Black Hill which overlooks Lovedale. The population of Ntselemanzi is 907 which includes 24 coloureds. There was a native village originally at Lovedale above the present site of the Lovedale Press buildings, but, with the expansion of Lovedale, the site was moved by about 1913 to the present location which was proclaimed the town location in 1928. Some title deeds to land go back to the 1850's when the area was farmed by immigrant Fingoes after the last of the frontier wars. Much of the land, however, belongs to the municipality, and is leased to the inhabitants for grazing and arable purposes. The location itself consists of two rectangular blocks placed at right angles to each other. The larger block of about 25 acres is occupied by registered owners of allotments, the smaller one of about 17 acres parallel to the road is occupied by owners of leasehold sites. Houses and huts on the larger blocks are more substantial than those on the smaller squatter's block. A shop, church and school cater for the needs of the population, the majority of whom work in Alice or at Lovedale. Individual dwellings vary from the square European type of house and oblong, oval and square huts to the traditional round hut. The latter is rapidly being superseded by square and oblong shapes illustrating the European influence and affording greater convenience. Roofs are of thatch or of corrugated iron, thatching reeds, roofing timbers and poles being obtained from the pine and wattle plantations on the nearby Amatola mountains. The huts are of wattle and daub, or sun-dried mud bricks, the exterior often being worked attractively with a simple rectangular pattern. Windows are very small and there

is often only one room in which all the family activities are carried out. Fortunately the brilliant sun permits many of these activities to be carried on out of doors for much of the year. The floor of the hut is made of mud or cowdung hardened to form a good clean surface. Furniture is simple, a dilapidated iron bedstead, stools, a chest containing blankets, and iron cooking pots.

Most of the rural inhabitants, however, do not live in the villages such as Ntselemanzi. The Xhosa have little tradition of village life. Their huts are scattered sporadically on hill tops and ridges, and the position may change periodically. Cattle kraals and storage huts are located near the main hut. An aerial photograph gives the impression of a great density of population, whereas only one hut in a cluster may be inhabited by the family.

The arable lots of Ntselemanzi village are situated on the lower slopes of Black Hill, adjoining the Tyumie river. The system of farming is rather like that of the Middle Ages with scattered strips and fields of 2-3 acres in size owned by individual farmers and grazing lots held in common. Maize is the principal crop ; yields are very low due to primitive methods of farming, lack of cultivation, poor soil, and the hazards of a climate with uncertain rainfall and great heat in summer.

The total population of Alice is only about 4,000 (including Lovedale and Fort Hare). It has developed very slowly and will not increase much more in size owing to the lack of local industries, except for a saw mill. It is primarily a regional and route centre for a wide rural area and also an important educational centre for non-Europeans.

METEOROLOGY IN SCHOOLS

A DISCUSSION OF ITS VALUE AND PRACTICE

P. ALUN JONES*

A SCHEME for the exchange of meteorological information between British schools, inaugurated by E. R. Franklin, of Impington Village College, Cambridge, has been operating since early 1953. During this time the participating teachers have raised a number of problems, chief amongst them being the uncertain place of meteorology in the school syllabus, a dislike of the repetition involved and the question of how to utilise the data exchanged to the best advantage. It may stimulate discussion amongst teachers if a survey is attempted of the present position and problems of meteorology in schools and if some suggestions for its presentation are put forward.

If meteorology is practised in a school, it will probably be the concern of the geography department and perhaps also that of physics. It is not an essential part of either of their disciplines, so a claim for its inclusion in the syllabus must be justified by arguments of definite benefits accruing. Opinion on the validity of such a claim is at

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present divided, ranging from the dour view of the Scottish Education Department that "some simple observational work, e.g., concerning weather, is useful, particularly in the Primary School, but in the Secondary school, practical work should be concerned with geography rather than with its related sciences"¹ to the conviction of those requested to speak for the Geographical Association that "it is important that Secondary pupils, at least during a part of their school lives, should make daily weather observations and keep records."² Without being extravagant, it seems that the study of simple meteorology, sensibly handled, has some contribution to make at most stages and in most types of schooling. Its main asset is that it is one means of easy contact with reality. The members of the UNESCO Montreal Seminar of 1950 recognised this, reporting that "effective geography teaching . . . needs direct contact with reality" which is only provided by outdoor work, and "the outdoor work that occupies only one lesson must obviously be conducted near the school. It may consist of weather observations . . . etc."³ At the introduction to systematic geography and physics simple practical meteorology will give a real meaning in the minds of the children to abstractions such as 60° F., 15° C. and 1 in. or part of an inch of rain, expressed as a decimal. Ideas of the changeability of our weather, of differences in climates, of prevailing directions and of the force of winds or of the deposition of dew will probably be understood and learned more readily following practical experience of watching and reading instruments. In turn the climatic maps in the children's atlases will come to mean something almost first-hand and the pupils may appreciate both the vast heritage of compilation they have at their disposal and the necessarily sketchy nature of, say, the isotherms for Central Asia. A temperature graph for their own station for a fortnight would have a real meaning to most 11-year-olds, giving a simple introduction to graphs, and meteorology provides a wealth of other statistics which a mathematics master might well appreciate as providing colour for his subject. The mere discipline of taking accurate instrumental readings and of keeping careful records must be of some benefit to the future engineer or paper worker even within the limits the psychologists now impose on the correlation factors of specific abilities. Similarly, town and country children alike, in this sophisticated age, will make a truer start in life if their attention is drawn to the workings of nature around them, and in the case of meteorology they have to go no further than a few feet beyond the door to make these observations. Obviously meteorology cannot and need not be pursued in its own right in schools, rather it may be presented as an important aspect of nature and the data obtained may be applied in a variety of causes. The

¹ *Geography in Secondary Schools*, Scottish Education Department, Edinburgh, H.M.S.O., 1951, p. 33.

² *Geography in the Secondary School, with special reference to the Secondary Modern School*, E. W. H. Briault and D. W. Shave, Geographical Association, Sheffield, 1952, p. 29.

³ *Handbook of suggestions on the teaching of geography*, U.N.E.S.C.O., Paris, 1951, p. 39.

person on the staff who benefits most from its study and who is best qualified to handle a topic at once elemental and catholic is the philosopher-scientist, the geography teacher. Little of his time need be allotted to meteorology, whilst he will value the scope for collaboration with other members of the staff.

Whilst some teachers feel that the educative value of meteorology is impaired by the repetition involved, others regret that some readings may not be taken a second time in a day. The solution of these difficulties lies partly in varying the type of attention given to meteorology from one age-group to another, since multiplication of instruments is rarely feasible, and partly in the elimination with the duplicator of as much clerical repetition as possible, so that full attention can be given to the weather in the short time that is often available. Some schools participating in the Scheme, notably boarding-schools, use excellent duplicated forms allowing for every possibility in taking and recording the daily readings. Others use ready-ruled notebooks for recording and plot their results on charts. Thus, once the regular observers are trained, the records are kept up-to-date with very little tedium and are at hand when the teacher wishes to expand them in a particular lesson. In schools it is not vital to take daily readings at any nationally specified hour, therefore they may be timed as is most convenient, e.g. before assembly or during morning break. It becomes clear that whilst junior forms may view the instruments for a certain lesson, or take observations of a simple nature for a short period, it is inevitable that the seniors must be responsible for the school records proper, both to ensure accuracy and to allow for detailed study. This will involve some degree of repetition, but even to-day with our many machines some repetitive work is unavoidable, hence this daily duty, apart from catching the spirit of meteorology, can be regarded as a training for adult life.

Under the Schools' Meteorological Scheme schools make contact with others interested from lists provided and then exchange by post whatever data they wish at intervals of their own choosing. In addition or instead they may take, at the cost of production, the duplicated issues of the "Schools' Monthly Weather Report," which give in condensed form the statistics from a score of well-placed schools. The advantages of participation in the Scheme are the increased sense of purpose and reality given to maintaining a station and taking readings when it is known that these are to be exchanged, and of course the availability of simple statistics from other schools for comparative use in lessons. Repetition work is a mere fraction more than that already involved, consisting in the initial preparation of report forms and then their completion and posting.

Weather observations may usefully be introduced in the last years of primary schooling, from age 9+ when simple explanations of causes begin to be understood and a rational curiosity is developing. The aim should be to begin the process whereby "generalised terms like hot, warm, cool, dry, moist, windy, gradually become associated

with more exact statistics."⁴ A popular way of introducing such work is the maintenance of a wall weather chart in the classroom, preferably made by the children, although commercial ones are published. This chart need not be completed every day, nor need it take much time until it is used in an explanatory lesson. Often the classroom thermometer may be used outside the window for a few minutes. Entries need only be verbal, perhaps with temperature in degrees as well, or pictorial, e.g., a figure with an umbrella or a snowman. These may be kept in stock and pinned on.

The desirability of weather recording in secondary modern schools has already been noted, and here it may perhaps best be fitted into local study work, or into the third year of a concentric syllabus, as has been suggested, where a consideration of the school's records leads to a study of the climates and vegetation of the British Isles and then of the world.⁵ Here again a classroom weather chart is a good vehicle, but entered numerically if instruments are available. A class might record for a term, and once a lesson on procedure had been given, two or three members could take readings each week. When the other parts of Britain came to be considered, parallel records from other schools could be introduced, and these should be readily understood from familiarity with the technique. It is generally accepted that weather records should figure in any local study and the Ministry of Education appears to consider a minimum adequate coverage to be a 17 days' non-mathematical, non-comparative, four-value scale record of cloud, visibility, wind-strength and warmth!⁶ Another authority, concerned mainly but by no means exclusively with secondary grammar schools, believes that children so engaged should "keep weather records" which "may be plotted in graphical form," observing "local wind, rainfall, temperature, sunshine and cloud," also determining the "general influences of local climate on human life, e.g., on hours of work, interference with work and play, illustrated mainly by comparison with contrasting districts."⁷ Between these limits teachers will be able to evolve a form of weather recording for their local studies suited to their age and type of children and the instruments available. It is clear that the Schools' Meteorological Scheme has much help to offer for the "comparison with contrasting districts" and also for the fuller cover of one district.

It is no longer necessary to advocate the study of meteorology in grammar schools, indeed the I.A.A.M. treats its inclusion in the syllabus as automatic, saying "for the general course . . . a knowledge of the simpler meteorological instruments and their use and the application of climatological data to regional characteristics are

⁴ U.N.E.S.C.O., *op cit.*, p. 20.

⁵ E. M. Coulthard, "The Future for Geography in Secondary Schools," *Geography*, vol. xxx, 1945, p. 53.

⁶ *Local Studies*, Min. of Education Pamphlet 10, H.M.S.O., London, 1948, pp. 38 and 40.

⁷ *Memorandum on the Teaching of Geography*, Incomp. Assoc. of Assistant Masters, London, 1935, p. 175, and *The Teaching of Geography*, 3rd edition, I.A.A.M., London, 1952, pp. 325 and 328.

regarded as sufficient.”⁸ To take two examples of the Examining Bodies’ requirements, for the London University “O” Level G.C.E. “elementary weather study based on local observations and weather maps” is expected, with a consideration of “the chief factors which determine climate,”⁹ whilst the Northern Universities more tersely require knowledge of “the factors which determine climate” and of the “distribution of temperature, winds and rainfall.”¹⁰ Accepting, then, the presence of meteorology in the syllabus, it may be of value to consider how and when it may be introduced. The primary school ground-work mentioned above should early be reinforced and preparations made for its utilisation in regional work. These should be complete by the end of the second year and their aim cannot be put better than in the words of the I.A.A.M. that “by devoting a short period to the systematic observation of wind, cloud, temperature, pressure and rainfall, and to the recording of the results, an accurate scale of values is acquired to which descriptions of distant climates may be referred. The notion of mean temperature and rainfall—annual or monthly—may be introduced, and the results may be recorded in graphic form.”¹¹ One way of achieving these aims is to use a few periods in the first year to familiarise the children with the instruments and the basic principles of their working both at the station and in the classroom and then in the second year to have the pupils taking readings for one term or for a winter month and a summer month. These would not be the readings for the record and for this reason they would have to be taken after the official ones, say at the morning break. The rain would therefore already be in the measuring cylinder and only the actual air temperature could be read unless there were two sets of maximum and minimum thermometers. Pressure, wind speed, etc., could be noted normally. The accuracy of these readings would not be significant, but generally curiosity about the station and the construction of a graph of the week’s readings by one member of each group would ensure interest. A period at the end of the term devoted to the calculation of averages for their work, and for similar results from other schools might be rounded off by a preparation where each child drew graphs for say half the term.

In the third year, most of the children will be able to understand the notion of air pressure and the working of barometers and this opportunity should be seized in co-operation with the physics department. This will lead naturally to a consideration of isobars and isotherms, and these may be constructed, if desired, from figures supplied in the Scheme’s “Monthly Weather Report.” It is all to the good if the Indian monsoon comes up at about this time in regional work!

⁸ *Ibid.*, 3rd edition, p. 76.

⁹ University of London, *Regulations for the General Certificate of Education Examination (Home and Overseas)*, 1954 and 1955, London, 1952 and 1953, pp. 31 and 32.

¹⁰ Northern Universities Joint Matriculation Board, *General Certificate of Education Regulations*, Manchester, 1953, p. 14.

¹¹ I.A.A.M., *op. cit.* (3rd ed.), p. 78.

In the fourth year, assuming a five-year course, the construction of more isobaric charts might well lead to one or two lessons used in demonstrating the building up of these charts into weather maps like those of the Meteorological Office.¹² This would involve the insertion of winds and might lead to the inductive formulation of the notion of pressure-gradient and the circulation laws. It would then merely be a single step with a good form to run over the weather symptoms of the passage of a depression and the idea of a "front," but this could not of course be done without touching upon the causes of depressions. The general opinion, it should be borne in mind, is that full discussion of the causes of depressions and western European weather should be left to the university.¹³ However, in the case of boys at least, many find this a topic of considerable interest, which is within their grasp, and the London G.C.E. regulations would appear to make acquaintance with it desirable. Perhaps the best course is for the teacher to give a simplified résumé of the processes, aided by wall-graphs of the school station's fluctuations of pressure, temperature and rainfall. This may be justified on the grounds that it is very much easier to appreciate the geography of Britain and western Europe with a clear picture of the climatic background in mind. Small wall-charts, made from exchange observations, will also be found helpful, in the fourth or fifth year, when the regions of the British Isles are being considered in detail.

For "A" and "S" Levels of the G.C.E. London University requires familiarity with "the representation of geographical data relating to climate and weather," and "the study of weather reports,"¹⁴ whilst the Northern Universities ask for "the factors determining climate including the physical processes involved."¹⁵ In the Sixth Form meteorological work might consist in a filling-out and extension of the ideas mentioned behind western European weather and also in a study of the other major climatic regions, and meteorology could also supply figures which mean something to the pupils for conversion into the various kinds of distribution maps and graphs, as exercises in techniques necessary to the geographer. The main opportunity for the Sixth Formers will be in maintaining the school station and keeping the records. They will by rota take the official readings each day, complete the reports sent to other schools and collate incoming records. In these tasks they will be reproducing for themselves in a miniature but realistic way some of the processes involved in making weather reports and forecasts, which, for London G.C.E. at least, they should know. The more interested pupils will probably be glad to attempt, perhaps as a society activity, to make forecasts. Even with a small Sixth, the time and repetitive work involved need not be great. A few minutes each day for the readings, and about a lesson a month, if it cannot be done outside the timetable, to prepare reports,

¹² Other aspects of classroom work on official weather maps are discussed by Mr. H. C. Prudden in the following article, pp. 188-191 of this issue.

¹³ See I.A.A.M. *op. cit.* (3rd ed.), pp. 81 and 301.

¹⁴ University of London, *op. cit.*, pp. 33 and 34.

¹⁵ Northern Universities, *op. cit.*, pp. 57 and 87.

are all that is necessary once a routine is established. The maintenance of a detailed wall-graph, to show the school's own readings, is a useful project which will be of interest to many, and there should be little difficulty in finding volunteers to look after it. Enterprising amateur statisticians should find it possible to construct similar graphs comparing the readings of the home school with those of some exchanging schools.

It does appear to be the case that elementary meteorology has a rightful place in school work as a component of geography, with certain benefits to other subjects. Indeed, rightly used, it is a side of geography which is at once attractive to the children, close to nature, significant to mankind and of educative value. It is to be hoped that this view will become more and more widely accepted, and that as it does so, schools will also realise the value of exchanging their readings and comparing them with those of other schools. This will be an advance in the true exploratory and scholarly spirit of geography.

Enquiries concerning the Schools' Meteorological Scheme in general should be addressed to Mr. E. T. Franklin, B.Sc., The Village College, Impington, Cambridge, whilst those about the Scheme's "Monthly Weather Report," should be sent to the writer, Mr. P. Alun Jones B.A. Leiston Grammar School East Suffolk.

CLASSROOM WORK ON THE DAILY WEATHER REPORT

H. C. PRUDDEN*

LIP service is often paid to the Daily Weather Report. Yet at not a few schools it is displayed for 24 hours without comment and then dismissed to the waste paper basket. The writer would like to commend the wider use of the Daily Weather Report in the classroom and offers below some exercises.

Weather Chart Symbols

The Daily Weather Report contains a mass of information which can overwhelm younger pupils at first sight. Therefore it is a good plan to start with a lesson on the symbols used to record the weather especially those elements of the weather that we can see or feel. Although each chart has an explanation on page 2, the figures are not always legible and the Beaufort Scale is missing. It is thus better to reproduce, either on the blackboard or on duplicated sheets, a simplified explanation; this should show symbols for temperature, precipitation, cloud amounts, wind speed and effects, and a combined example for one station.¹

Having checked for himself the weather on the day of the lesson and allowed the pupils time to look over the symbols the teacher

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¹ See W. G. V. Balchin and A. W. Richards, *Climatic and Weather Exercises*, London, 1949, Section E.

questions them as to the weather outside and then asks for the appropriate symbols. The time, date and points of the compass should all be on the board, the latter to make clear the wind direction. The pupils can then copy down the symbols in their exercise books as an example of a station report.

It is a useful "warming-up" exercise to begin later lessons by asking the pupils to write down the day's weather in symbols. This encourages observation of the weather.

North American Contrasts

The Daily Weather Report shows nearly the whole of North America and affords an excellent opportunity to study continental variations of weather. Perhaps the best approach with young pupils is for the teacher to select a chart which shows good contrasts and which is normal for the season. Weather symbols and place names for about six stations should be copied on to a blackboard outline map or duplicated outline maps. With the help of the explanation of symbols pupils can then answer such questions as, "Where is the wind strongest?" or, "How much cloud is there at Vancouver?"

This work may be followed by trying to discover with the class a partial explanation of the contrasts in weather. The pupils may take up the suggestion that the origin and character of the air masses at the various stations are important clues.

North Atlantic Weather

As soon as the pupils are familiar with some of the symbols they can study an actual chart. If the school has kept back numbers of the Daily Weather Report the pupils may study these. The younger pupils feel rather lost at first and so a short period of quiet study and oral work should come first. The teacher can help by asking for the warmest, coldest and windiest stations.

No series of lessons on the oceans should omit the study of the North Atlantic with the help of the weather chart. The pupils can be asked to write down the symbols for various stations direct from page 2 of the Report, together with explanations. Stations suitable for study include Bermuda, West Greenland, Spitsbergen and Madeira. The weather at the various stations can be compared and the influence of ocean currents discussed. It should be noted that the ships reports on pages 1 and 4 show sea temperatures and height of waves. The teacher must check through each chart to see that there is a report for the selected stations and that the pupils can read it clearly; needless fuss is avoided by marking the stations with a circle.

A warning should be given here that pupils below average intelligence find difficulty in working out wind direction from the charts and in transferring data from one map projection to another.

Consecutive Weather

One great merit of the Daily Weather Report is that it gives details of station observations at intervals of six hours from mid-day. The pupils can, therefore, study diurnal weather changes and the development and passage of pressure systems. For example, from the

charts on pages 2 and 3 the pupils can make a table of the weather at one station from mid-day to 6 a.m. next day. Suitable stations include Valentia, London, Shetland Islands and Paris. In this exercise atmospheric pressure may be included and the younger pupils introduced to the barometer.

The station observations on pages 1 and 4 provide very good material for more advanced work. The passage of a front or diurnal changes in calm weather become better understood when plotted on graph paper. It is necessary for the teacher to make a careful selection of stations before the lesson however.

Atmospheric Pressure

Most textbooks dealing with weather reproduce examples of depressions and anticyclones for the pupils to study. However, there is something to be said for the teacher taking an example from weather of the past month, a "High" over Europe and a "Low" passing Iceland for example. If the teacher has a blackboard outline map he may use it for the pupils to copy from. This can lead to a discussion on what causes the wind to blow. (Many textbooks begin this explanation by describing world wind belts. A more effective way is to describe firstly the air circulation near an open fire, secondly summer cumulus, thirdly land-sea breezes and finally world atmospheric circulation).

Another exercise, mainly for advanced pupils, is the construction of a section showing atmospheric pressure and weather along the Greenwich Meridian from 80° N. to 30° N. Weather symbols along the meridian are inserted together with place names. The pupils can see at a glance what kind of weather is associated with high and low pressure areas and the permanence or otherwise of wind and pressure belts.

When the pupils have become acquainted with actual pressure systems they may find the traditional textbook treatment more meaningful and interesting.

Air Masses and Fronts

Since many of the above exercises are based on fossil weather buried in the Daily Weather Report and beyond the reach of memory every opportunity must be taken to relate the weather chart to the weather experienced from day to day. Five minutes spent discussing whether the air is warm, cold, dry or damp, where it has come from and the reason for any sudden change of weather will give the pupils an incentive to study the weather chart next morning.

Except to the trained eye air masses are not always easy to distinguish on the weather chart, and fronts are often complex; this makes individual work difficult. It is therefore best for the class to study one good example. The teacher may select from recent charts a well defined air mass and front showing a marked change of temperature. For those who keep their weather charts there is a useful example on the chart of November 28th, 1953, showing warm air from the Atlantic and Mediterranean penetrating Russia with a temperature rise of 20° F. along the front.

Sixth form pupils may be given a more advanced exercise which is to study the source areas of those air masses which reach the British Isles. Pupils can be asked to study individually three contrasted areas of high pressure with little or no wind and to say firstly, what characteristics the air takes on from the underlying land or sea, and secondly, what modifications might take place during its passage to the British Isles. A very useful summary statement of air mass climatology has been provided by Professor Austin Miller.²

Time and Place Determination

The Daily Weather Report can also be used for lessons on solar time; this is important in that the temperatures on the mid-day chart for the northern hemisphere may be appreciably affected by diurnal changes. Pupils can also find the longitude and latitude of stations studied.

Monthly Weather Report

Details of each month's weather are printed in the Monthly Weather Report. Among other figures, the totals for the many stations of the number of hours of sunshine or number of ground frosts are very useful to those teaching gardening and botany as well as to the geographers. The Monthly Report also provides good material for comparing the weather at different stations.

Display of Daily Weather Report

Since the figures are small and often indistinct the weather charts should not be displayed much above the pupils' eye level. If there is room it is useful to display the charts for two days side by side. Other material for the weather board includes newspaper cuttings and photographs dealing with weather at home and abroad. A pointer can be used to pick out special features of interest such as a hurricane approaching Florida. The display of landscape pictures typical of stations studied by the pupils helps to supplement the abstractions of the weather map.

Even if there is little storage space available it should be possible to retain weather charts for three successive terms. These can be used for individual study. February, July and November are suitable months from which to draw maps for these studies.

Conclusion

It is not intended that the above exercises be used altogether in one course of lessons since their suitability ranges from first form to sixth form level. Also it must be admitted that pupils below average intelligence, especially the first year C and D forms of secondary modern schools, find the Daily Weather Report too abstract and complex.

In its present form the Daily Weather Report³ is a most useful teaching aid. Dealing as it does with actual weather at real places, and which the pupil may have experienced, it conforms to the best teaching principles.

² "Air Mass Climatology," *Geography*, vol. xxxviii, 1953, pp. 55-67.

³ About 420 schools receive the Report. The cost is 52s. 6d. for three terms. For further information see the leaflet "Daily Publications" (Form 2452) issued by the Meteorological Office, which has also published "Examples of Weather Maps showing typical distributions of pressure," in pamphlet form, price 1s.

A REVIEW OF SOME WEST EUROPEAN STATISTICAL SOURCES

K. R. SEALY*

NEVER before in its history has Europe been so well documented statistically. One of the features of European post-war economic rehabilitation has been the assembly of a great deal of statistical material. Plans varying from the Marshall Plan to the more recent Schuman Plan have required statistical data from which an assessment of the needs of post-war Europe might be made. For those who study the geography of Europe, the resulting material can prove an extremely useful aid to the better understanding of the area. The purpose of the present discussion is not to present an exhaustive survey of the available material but to suggest those items of most use to the geographer.

The data at our disposal may be divided into two main sources, (a) United Nations and other international sources and (b) the purely national compilations. For the most part the former group, together with the wider World surveys,¹ serve most needs. The national sources are more rarely necessary, except as supplementary material. The U.N. statistics have two main advantages. In the first place, the tables employ uniform units and are easily comparable, while, secondly, the reader experiences no difficulties with language since English is used as one of the standard tongues. By the same token, the national publications, which normally employ the units and language of the country concerned, are more difficult to use effectively for comparative purposes.

Under the auspices of the United Nations, the bulletins of the Organisation for European Economic Co-operation (O.E.E.C.) and the Economic Commission for Europe are the most useful. O.E.E.C. publishes a bi-monthly *General Statistical Bulletin*² which gives an overall picture of current progress in the member countries,³ the U.S.A. and Canada. The statistical tables cover a wide range of topics ranging from population and manpower to industry and trade. Metric units are employed throughout and the addition of line graphs to show trends is an attractive feature. More specifically, the *Foreign Trade Bulletins*, in four series, furnish a comprehensive picture of European trade, which is considered from a different standpoint in each of the four series, and once again the U.S.A. and Canada are included to facilitate comparison. Apart from the monthly bulletin

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¹ For details see "Some useful statistical sources: a review" by the present writer in *Geography*, vol. xxxviii, Nov., 1953, pp. 308-15.

² For full references see bibliography appended.

³ Member Countries of O.E.E.C. are Austria, Belgium, Denmark, France, Germany (Western), Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Sweden, Switzerland, Trieste, Turkey, United Kingdom.

for trade by areas (which constitutes the first of the four series), an *Annual Yearbook* is also published covering, from the same standpoint, the period 1937-51. This volume is of particular interest since it provides a means of comparing pre-war and post-war conditions, while in some tables, information for years as far back as 1930, is available. The explanatory notes should be closely studied in order to clarify the definition of the "geographical areas," and to ensure valid comparison. The 'chart' section containing line, bar and clock graphs provides further useful data.

The Secretariat of the United Nations Economic Commission for Europe publishes two general surveys, the annual *Economic Survey for Europe* and the quarterly *Economic Bulletin for Europe*. The former is an extremely valuable document covering all aspects of economic life. In addition to ample statistical data, each volume highlights special problems that have arisen during the past year, e.g. the 1950 Survey was more particularly concerned with raw material shortages and inflationary tendencies. The current 1953 edition is perhaps the most interesting, since it is devoted to a complete survey of the post-war period. The appendices in this volume should be carefully considered since some of the statistics used are in the nature of broad estimates, introducing a wider margin of error than is normally found. The result is an exhaustive survey which, on the whole, justifies the methods employed. All volumes contain data covering production, finance and trade in the past year. The quarterly *Economic Bulletin* may be said to cover the interval between the annual surveys and is modelled on very similar lines. Here again the economic statistics and the special articles on current problems are the salient points to note.

On more specific topics, the quarterly bulletins on *Coal and Steel* and the annual *Transport Bulletin* may be mentioned. As is usual with U.N. material, metric units are used in each case, but one should note that a "billion" is taken as a 1,000 million, a fact which is not always obvious. The definition of items is not always consistent from year to year, particularly for the period up to 1949, and in such cases adjustment has been made to bring the tables into line. The notes to the tables are, therefore, necessary preliminaries.

Finally, consideration must be given to the various national sources of statistical data. Most countries now issue an annual yearbook, modelled on the lines of the U.N. Statistical Yearbook, dealing with most aspects of national life ranging from land area and use, population and industry to foreign trade and finance. The yearbooks for western Europe are the more easily obtained and are listed in full in the bibliography. They call for little comment, except to note that the units employed, especially the fiscal ones, vary widely, and, up to very recently, inconsistencies in the bases of the tables also made comparison somewhat difficult. Western Germany is something of an exception since the occupation authorities issue limited statistical returns, covering general economic progress. These documents are in

English and afford a more readily assimilated source than the more comprehensive *Statistisches Jahrbuch*.

A special feature of the French *Annuaire Statistique (abrégé)*, and more particularly the very useful little volume *Compendio Statistico Italiano*, is the inclusion of maps. The French publication has maps expressing aspects of population distribution, while the Italian work makes use of maps and graphs throughout. Most of the yearbooks have either French or English prefaces, sub-titling and table notes and are, as a result, more easily understood by English readers. The Dutch, Norwegian, Danish and Swedish volumes use English as a second language, while the Portuguese and Finnish works employ French. One should note, finally, that in practically all cases there has been a re-orientation in the presentation of material to bring it more nearly into line with U.N. practice, particularly in the post 1950 editions.

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Publications are listed under the name of the government or other publishing body. All information is the latest available at the time of compilation.

UNITED NATIONS (Publications are available from Her Majesty's Stationery Office, P.O. Box 569, London, S.E.1).

Organisation for European Economic Co-operation.

General Statistical Bulletin, bi-monthly.

Foreign Trade Bulletins, in four series.

Series I. *Trade by areas*, monthly.
Annual Yearbook, 1937-51, 157 pp.

Series II. *Foreign trade by commodity categories*, quarterly.

Series III. *Foreign Trade by selected commodities*, quarterly.

Series IV. *Foreign trade by countries of origin and destination*, booklet for each O.E.E.C. member country, six monthly.

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Secretariat of the Economic Commission for Europe.

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Economic Bulletin for Europe, quarterly statistics, three issues yearly.
Annual subscription, 11s. 3d. Vol. 1, No. 1 was first quarter of 1949.

Quarterly Bulletin of Coal Statistics, replaces monthly *Bulletin of Coal Statistics*. First issue was No. 1, 1952. Annual subscription, 25s.

Quarterly Bulletin of Steel Statistics. First issue was for December, 1950. Annual subscription, 25s.

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Timber Statistics for Europe, quarterly, 15s.

BENELUX.

Institut National de Statistique, Brussels.

Annuaire Statistique, edition 1951. In French and Dutch, with English and Spanish added for the Introduction and Contents page.

COMMUNAUTE EUROPEENNE DU CHARBON ET DE L'ACIER.

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Informations Statistique, monthly No. 1, November, 1954. Printed in French.

UNITED STATES LIBRARY OF CONGRESS.

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Anuario Estadístico de España, Ano XXV, 1950.

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Statistisk Årsbok för Sverige, 1952 (Statistical Abstract of Sweden).

INDIA AND PAKISTAN*

I. S. MAXWELL

It must surely be a matter of some considerable reproach to British geographers that, in spite of this country's long and close association with the Indian sub-continent, no really comprehensive account of its geography had been attempted in recent times. It is not that there has been any lack of published material relating to the area, but rather that (as Professor Spate says in the opening lines of his preface) "Among ruminant animals, writers on Indian affairs form a special class: some refreshing exceptions apart, they chew over and over again the cud of Royal Commissions, Tariff Enquiries, Gazetteers, and the like. However rich the original material, nutritional returns soon diminish: . . ." Though Professor Spate himself has naturally relied heavily on such material, the "nutritional returns" to be derived from a study of his book are still very great and it does fill a most serious gap in our regional geographical literature.

The main plan of the book is wholly admirable—would that all regional geographies were as logically developed. Basically there is a four-fold division, the parts being entitled The Land, The People, The Economy and The Face of the Land (could not this last have been more fittingly called The Landscape?). The first three deal with the various topics systematically, the last is wholly regional in character. Part 1, which treats of the physical environment, comprises three chapters dealing respectively with Structure and Relief, Climate, and Vegetation and Soils. These chapters, though they draw almost entirely upon the work of others, do nevertheless provide a most useful introduction to the physical setting. From all the important literature (much of it very inaccessible to most geographers) Professor Spate has produced an admirable account of the present state of knowledge. Such an account, however, could be paralleled for other portions of the earth's surface and it is only in Part 2, which deals with the human element, that the distinctively Indian atmosphere begins to emerge. Some idea of its scope is shown by the chapter headings—Population and its Problems, The Peoples of the Sub-Continent, Historical Outlines, and Village and Town in India. The topics considered in these four chapters are too numerous to mention individually, but they range from demographic structure and trends to Hinduism and Caste, and from the Indus Civilisation to the general characteristics of Indian towns. The third part of the volume, which is concerned with the economy of the sub-continent, is divided into five chapters. The first two of these (The Agrarian Base, and Agrarian Problems and Programmes) both deal with the many and various aspects of farming, while the second two discuss industry (Power and Mineral Resources, and Development, Problems, Prospects). The last chapter in this section is on Transport and Trade. Again, the individual topics covered are both diverse and comprehensive, and at the end of Part 3, there are also seventeen pages of statistical tables. The fourth, and largest, section comprises thirteen chapters dealing with the various regions, these being followed by a chapter on Ceylon by B. H. Farmer. In a short introduction to the regional section Spate discusses the difficulties

* *India and Pakistan: A General and Regional Geography.* O. H. K. Spate. 15.5 × 23.5 cm. xxxvi + 827 pp. London. Methuen and Co. Ltd. 1954. £3.5.0.

inherent in any attempt at satisfactorily dividing the sub-continent into regions and reviews the divisions already suggested by others. He concludes by admitting that his "scheme is tentative, but with 35 regions of the first order (under the three macro-regions, and excluding islands), 74 of the second order, and about 225 sub-divisions of these, it may fairly claim to represent a refinement on previous divisions." Whether it is also an improvement seems much less certain. A significant weakness is surely revealed by the statement that "it would obviously be absurd to treat Assam in three places—as part of the Mountain Rim, of the Indo-Gangetic Plains, and (for the Shillong Plateau) of the Peninsular Block." Apart from the fact that the Shillong Plateau is not *geographically* a portion of the Peninsular Block (however much it is *geologically*), the fact that Assam lies within two of the macro-regions of the sub-continent must imply (if these latter mean anything at all) that the regional geography of these two parts is totally different. Therefore, logically, they cannot be grouped together and discussed under the same section. If it is considered so essential to treat Assam as a unity, then any absurdity lies in the labour and effort involved in dividing out the 225 sub-regions. And if the unity of Assam must be preserved, surely other political units should be treated in the same way. In other words, the areas of study become political and not geographical units.

Though the plan of this book is good, there is no doubt that the three systematic sections could have been enlarged with advantage. Many topics of great interest and importance have had to be condensed into a small space. Thus ethnic stocks are considered in less than two pages, while the problems of soil erosion (apart from remarks in the regional sections) are only referred to in the passages relating to the importance of the forest cover and to tropical weathering—a more comprehensive account could well have been included in the chapter dealing with agrarian problems and programmes.

In spite of its merits, this book is nevertheless not without certain grave defects. Some of the difficulties of nomenclature that stem directly from the partition of what used to be unambiguously called India are discussed in the section entitled "Conventions and Preliminary Data." Thus in order to distinguish between the old India and the New Republic of India, Spate italicises the latter—a somewhat unhappy solution because it is almost impossible when reading to forget the much older convention that italics indicate emphasis. Partition has also resulted in the alteration or substitution of some other names; for political units Spate chooses to use the new names, for towns the old ones. Again, Professor Spate's convention 6 states: "The spelling of place-names, with one or two exceptions, follows the Survey of India." If these exceptions are really so few, then why make them at all? The convention that is likely to lead to the greatest amount of confusion, however, is that dealing with the stroke and the hyphen. "In directions the hyphen indicates movement, the stroke mere alignment; e.g., the river Tongawadi flows N-S, but the area is bounded by a line N/S through Tongawallahpur. Elsewhere the hyphen is conjunctive, the stroke disjunctive; e.g., the Assam-Burma Ranges (continuity), the Assam/Burma boundary (division); or the Kistna-Tungabhadra basin, but the Kistna/Godavari watershed." According to this then, the heading on page 483 and the title of Figure 90 should both be, not "The Indo-Gangetic Divide," but "The Indo/Gangetic Divide."

But the most severe condemnation of all must be reserved for the way in which abbreviations are liberally sprinkled throughout the text. This is, after all, meant to be a serious text-book and should not therefore be written in a medium more suited to the recording of lecture notes. For all too long the charge has been levelled against geographers that they are incapable of producing works of any literary merit. And as long as geographers write in this manner it will be impossible to refute such a charge. Two examples must suffice to support this condemnation, though they by no means illustrate all the horrors perpetrated (for example Wnmost, Nwds, Far E, Wn UP). "All this Nn section of the Peninsula (except for the NE/SW trending Aravalli-lower Chambal area) is dominated by strong E/W trends (with some NE-SW strikes, e.g. in the Maikal and Hazaribagh Hills), themselves probably influenced by buckling and sagging of the Nn flanks of the old block under the stress of the Himalayan orogeny" (page 13): "Coimbatore Dt (which includes some hill country both N and S) has a NSA of about 1,825,000 ac., TSA about 2m." (page 713).

Professor Spate's phraseology is sometimes too colloquial for a serious text-book, as when he says that Bhutan was "in fact misgoverned by the constantly warring Governors of E and W Bhutan, working through their puppets the Deb Rajas, of whom there were normally two in play and half a dozen back in the box" (page 419). Some may even feel that certain of the personal recollections are also a little out of place (for example, his remark that the saliva-forming properties of *pan* "may thus be a source of acute embarrassment to the polite Westerner, whether it is his own problem of disposal or someone else's") (page 76, footnote 12) though they do undoubtedly add interest and realism to the book. It is also unfortunate that the author's style does not always lead to clarity of expression and it is sometimes not possible to comprehend exactly what he means: for example, "... when he (Sivaji) died in 1680 he held the Konkan less Bombay, the Portuguese towns, and Janjira—the last a holding of the Abyssinian Sidis, nominally the Bijapur and later the Mogul admirals" (page 160).

In many ways the maps and diagrams form the least satisfactory part of the book. Their function is surely to assist the text and to show visually that which cannot easily or effectively be described in words. Granted this, then some 45 per cent. of the figures are in some way defective and at least ten of them contain actual errors. Many places named in the text have not been included on the appropriate maps and the frequency of their omission is most unfortunate. Furthermore, the standard of cartography is far from constant, varying from such appalling examples as Figures 1, 117 and 130, to the clear crop distribution maps (Figures 48–52) and to the population distribution map of Ceylon (Figure 158) which is not only clear but also aesthetically pleasing. This diversity of cartographic standards is undoubtedly partly due to the many and varied sources from which the maps have been derived. But this simply makes the need for redrawing to a common standard all the more necessary. The frontispiece is a complete waste of paper.

Both text and maps contain mistakes, of which the following are examples. Karachi surely lies just off the "Wn" and not the "En" extremity of the Delta (page 458), while for "polygamy" on page 626 Professor Spate obviously means "polygyny." Errors in the maps include such examples as Figure 40 where it is recorded "under 65,000 ft. stippled," Figure 79 where "DARBAI" should be "DARGAI" (it is correctly

spelt in the text on page 448), Figure 132 where the name "Nagpur" appears twice (one name immediately above the other), Figure 147 in which all the railways are shown to be "B.G., S.T." whereas they are actually metre gauge, and Figure 160 from which the narrow gauge railway from Nanu Oya to Ragalla has been omitted.

Though the book is a long one, it is not cheap. At this price one might reasonably expect a volume with fewer defects than this one possesses. For these, both author and publisher would seem to be to blame. The work is planned so well and contains such a vast amount of detail that it is incomparably better than any other book on the sub-continent and it is not likely to be superseded for at least a generation. Potentially it is first class; with efficient editing it could have become so.

O.S. SEVENTH SERIES—A CORRECTION

A correspondent has suggested that a sentence in our review* of the new series of Ordnance maps which is now appearing conveys the impression that many of the features which strike one as admirable on this map are not in fact innovations. Aerodromes were first shown on the fourth edition of the one-inch map, airports on the fifth and sixth editions, telephone kiosks on the sixth, glasshouses on the fourth and sites of battles on the second edition, though not as they are shown now; the intersections of meridians and parallels have been shown previously on both fifth and sixth editions. Our correspondent also points out that the statement that county boundaries are not now shown is erroneous. For these helpful corrections both our reviewer and the Honorary Editor express their gratitude.

**Geography*, vol. xxxix, April 1954, p.147.



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THIS CHANGING WORLD

EDITED BY L. S. SUGGATE

PROBLEMS OF THE OCEAN FLOOR

February 28th, 1953, was devoted by the Royal Society to a discussion of problems of the ocean floor and a number of short communications were made and, in some cases, afterwards elaborated by distinguished geophysicists and geologists. Sir Edward C. Bullard, Director of the National Physical laboratory and a leader of oceanography was in the chair. A good deal of divergence of opinion emerged, especially between the geophysicists and the geologists present. M. Rothé of Strasbourg, director of the International Bureau of Seismology, contributed a map showing the mid-Atlantic ridge curving round, south of Africa, into the corresponding ridge of the Indian Ocean. The geophysicists argue that at 35-40 km. beneath the continents crust material gives place to something far more basic, thought to be peridotite. They also think that at 5 km. below sea-level, in the oceans there is often a layer of basalt, perhaps 5 km. thick and then peridotite so that this material comes much nearer the surface under the oceans than under the continents. Some of the geologists dispute the whole argument. The need for research at the edges of continental shelves is obvious.

The discussion is given at considerable length as Series A, 1150, of Proceedings of the Royal Society issued March 18th, 1954*. The question of permanence or otherwise of ocean basins is referred to only here and there, and that of theories of continental drift did not arise.

H. J. FLEURE

RECENT FINNISH GEOGRAPHICAL PUBLICATIONS IN ENGLISH

The smaller countries of Europe are at a disadvantage in making their research and publications internationally known because of the language barrier. Among them, the Finns sense this acutely—the more so because nine-tenths of their reading public of four millions are strongly attached to the Finnish language. A response has been the assiduous cultivation of a world language in which to express their scientific publication. Partly because it is also the language of America, the principal foreign language has become English which is to-day the first foreign language in Finnish schools; not fewer than 10,000 adults are also learning it at the present time. The Finnish Geographical Society has always acknowledged the importance of English and the opportunities which it provides for giving international currency to its publications. In more recent years, the Society has published as much in English as in its national language. *The Handbook of Finnish Geography (Fennia, vol. 72, Helsinki, 1952*)* embraces all aspects of the country's geography and has found its way into most of the important libraries in Great Britain. *Fennia, vol. 75, 1952** is a symposium on "The Recent Climatic Fluctuation in Finland and its Consequences" consisting of eight papers with reported discussion, edited by Ilmari Hustich; a "best seller," it presents interesting information complementary to that published by Professor H. W. Ahlmann in his climatological studies. *Fennia, vol. 76, 1953** has three papers of interest to physical geographers, touching land upheaval along the Finnish littoral, salinity and temperature studies in Finnish seas, and the hydrography of the fell-lake Kilpisjärvi. It contains also the most up-to-date statement in English on Finland's Lapps (an abridgement of the Finnish State Commission's Report on Lapp affairs by Karl Nickul)

* References thus marked in "This Changing World" are available on loan from the library for consultation by members of the Association.

with a distribution map of the 2,500 Lapps (differentiated according to their traditional groups) and references to recent publications in English on Lapland at large.

The Geographical Institute of the University of Turku (Swedish Åbo) has also published a number of papers in English. They cover city morphology in Turku, railway traffic in relation to Finland's export harbours, and land use in early 19th century Finland. The *Atlas of Finnish History*, edited by Eino Jutikkala, Helsinki, 1949, uses English captions and summarises many features of the historical geography of Finland. Professor Jutikkala is also Finnish editor of the Stockholm publication *The Scandinavian Economic History Review*, a new journal in the English language, which also covers Finland, published by the Scandinavian Society for Economic and Social History and Historical Geography. The Central Statistical Bureau of Finland has contributed a historical survey on *Population of Finland, 1751-1805* (Helsinki, 1953); an English summary and table headings are employed. Essential current statistics of Finland will be found in the *Bank of Finland Bulletin* (six times a year) and *Unitas*, the quarterly publication of Pohjoismaiden Yhdistys, both printed in English and readily obtainable from the Helsinki headquarters of the respective banks.

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W. R. MEAD.

MODERN SHIPBUILDING AT NEWPORT, MON.

Once noted for the building of wooden cargo vessels the largest of which would compare unfavourably in size with a modern "coaster," shipbuilding on the river Usk gradually declined and disappeared with the introduction of iron hulls, the use of steel, and the increase in the size of ships. Peak production was reached in 1866, when ten vessels were constructed aggregating 2,688 tons. The past year, however, has witnessed a revival of the industry in Newport where unusual methods of ship construction and launching have aroused widespread interest in maritime circles.

The muddy banks of the river Usk with its unusually high range of tide provided no suitable site for the larger traditional type of shipyard. The new project involves the building *in dry dock* of the largest type cargo vessels, especially oil-tankers for which there is likely to be a steady demand for some years to come. The dry dock method, already operating successfully in U.S.A. and Sweden, permits the largest vessels to be built on sites lacking the traditional requirements and hitherto declared unsuitable. The first of two new dry docks at the mouth of the river Usk has been completed and is designed for the construction of ships of 4,000 tons; the second dock will be over 700 feet long permitting the assembly of the largest cargo vessels yet envisaged.

When a new hull has been completed, the dry dock will be flooded and the ship "launched," after which it will be towed into the main Alexandra Docks where part of the quayside has been specially equipped with a modern workshop for the completion of the superstructure. Local tradesmen with ship-repairing experience will provide most of the labour under the supervision of specialists from north-eastern England, many of whom have already been recruited and officially housed as "key-workers." Steel will come from the mills at Margam near Port Talbot; the new superstructures will largely consist of aluminium alloys supplied by the Northern Aluminium Company whose works at Rogerstone are only four miles away. Engines will vary in type according to individual requirements and will come from well-known northern engineering companies.

Despite gloomy forecasts of serious competition from Germany and Japan, great faith is placed in the ability of this modern yard to produce ships quickly and cheaply. The success of the scheme depends largely upon reducing costs by the adoption of the latest welding techniques in

pre-fabricating many of the fittings in adjacent workshops, permitting progress to be made under cover in all weathers and the assembly of "sections" well in advance of actual requirements. Recent metallurgical research has done much to restore confidence in welded vessels and the first of twin 3,000 ton pulpwood-carriers is already under construction, to be launched early in June, 1954, for the Quebec and Ontario Transport Company.

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T. HUGHES.

AUSTRIA AND TRIESTE

In the current dispute over the future of Trieste attention is drawn from time to time to the rôle of this port in Austria's overseas trade and the importance of this trade to Trieste. Austria has been careful not to become involved in this controversy, though a solution which permits a steady flow of trade through Trieste to or from Austria is important for Austria and vital for Trieste. That this is so is brought out clearly by the relevant statistics.

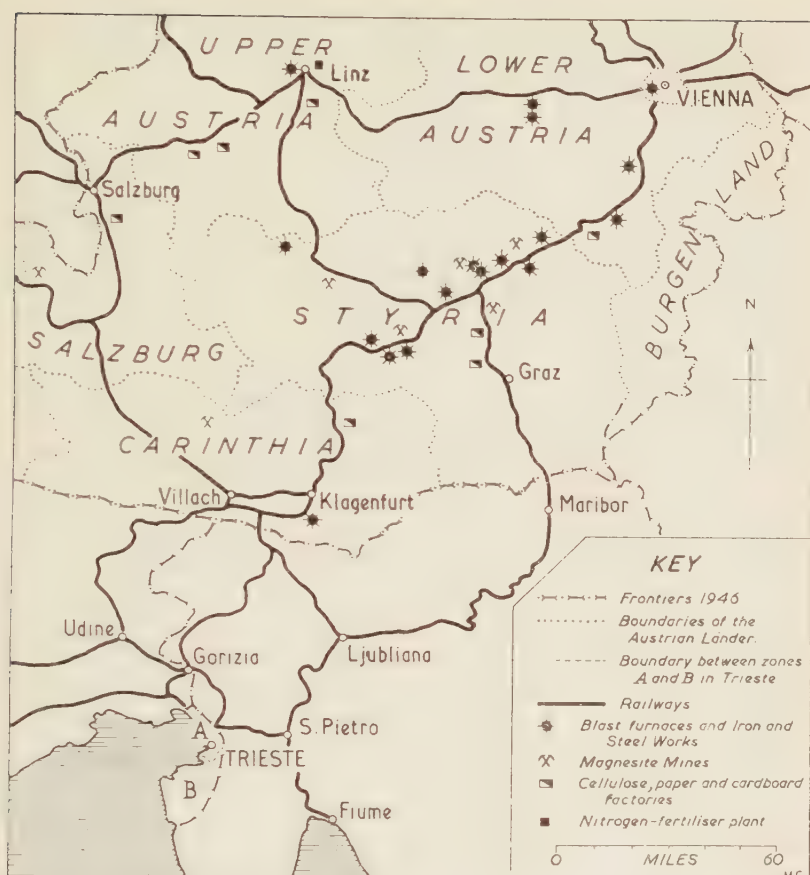
Before the first World War, Trieste was the most important port of Austria to which it had belonged since 1382. In 1719 it was declared a "free port" and about 1900 its total turnover had reached some 2 million tons per year. At the time of the outbreak of the 1914-18 war this had increased to about 3 million tons. The peace settlement gave Trieste to Italy, but the economic links with Austria were soon re-established and although in the inter-war period the port's turnover did not exceed the 1913 figure and varied between 2 and 3 million tons per year, it would have been very much less without the Austrian traffic. Of all goods rail traffic between the harbour and the hinterland, the Austrian shares were 28 and 40 per cent. respectively of traffic thus reaching and leaving the port, and Austria was well ahead among the countries using Trieste, with Czechoslovakia and Hungary far behind. Trieste was again the major gateway for Austria's overseas trade.

The end of World War II brought the establishment of Trieste as a Free Territory, its division into Zone A under joint British and American and Zone B under Yugoslav administration, and the virtual loss of Hungary and Czechoslovakia from its hinterland. This loss was, however, counter-balanced by the use of Trieste for American aid deliveries to Austria, while at least until 1951 Austrian overseas exports were largely made via Trieste, since the North Sea ports were either heavily damaged or otherwise inaccessible for Austria. The use of Trieste for a large proportion of Austrian imports is a more traditional and permanent feature.

Trieste, German and Benelux ports handled respectively in 1952—1951 figures are shown in brackets—44 (60), 47 (30) and 9 (10) per cent. of Austria's overseas exports; the corresponding figures for imports from overseas were 65 (66), 32 (30), 3 (4). The North Sea ports are clearly of less importance than Trieste for Austria's trade. The following table shows the relative importance of Austrian trade to the ports in question in 1952, when for the first time the total turnover of Trieste exceeded 4m. metric tons.

	Total turnover. <i>In 1,000 metric tons.</i>	Austria's share. <i>As</i> percentage.	Percentage of Austrian total.
Trieste	4,064	2,026	49·5
Bremen ports†..	9,673	820	8·5
Hamburg	15,200	199	1·3
Rotterdam ..	39,783	96	0·24
Antwerp	27,482	20	0·08
Amsterdam ..	6,200	18	0·03
Austrian total ..	—	3,179	—

† Bremen, Bremerhaven, Wesermünde.



In 1952, 48.5 per cent. of the tonnage of goods unloaded at Trieste were consigned to Austria, while 53.5 per cent. of the tonnage of goods loaded came from Austria. There was a remarkable difference between the tonnages unloaded and loaded, which respectively totalled 3.12m. metric tons and 0.944m. metric tons.

The importance of Austrian trade for Trieste is brought out even more strikingly by the size of its share of the goods that arrived at or left the port by rail. Of 2.89m. metric tons in 1951 and 2.82m. metric tons in 1952, the proportions that went to and came from Austria were 71 and 72 per cent. An analysis (see overleaf) of the Austrian trade via Trieste and a comparison of the rail distances from Vienna and other major centres of Austria to Trieste on the one hand and Bremen and Rotterdam on the other clearly show why such preference is accorded to Trieste.

The accompanying map enables the items of Austria's trade via Trieste to be studied in relation to the location of the Austrian population agglomerations, the iron and steel, and paper and cellulose industries and the magnesite mines. Of the Austrian *Länder*, Styria and Carinthia have the highest proportion of their area under forest (49 and 44 per cent.), and are the leading timber producers.

Trieste is of particular importance for Austria's trade with Africa, the Near and Far East, South America and, to a lesser extent, North America, while Austria is clearly the leading state making use of Trieste as a port.

AUSTRIAN EXPORTS VIA TRIESTE
in 1,000 metric tons

	1938	1952
Timber	20	231
Pre-fabricated houses and other timber products	0	13
Paper and cardboard	55	49
Cellulose	27	13
Nitrogen fertilizer	0	111
Pig iron and iron products	18	34
Magnesite	21	34
Various	19	21
Total exports	160	506

AUSTRIAN IMPORTS VIA TRIESTE
in 1,000 metric tons

	1938	1952
Wheat	31	297
Maize	118	248
Other grains	17	209
Flour	0	8
Oil cake and oil seeds	30	35
Citrus fruit and dried figs	11	10
Coal	3	386
Ores	87	225
Sulphur	4	15
Cotton	9	7
Mineral oil products	69	11
Pig iron and iron products	11	10
Various	112	59
Total Imports	502	1,520

RAIL DISTANCES IN KILOMETRES

	Trieste	Bremen	Rotterdam
Vienna	578	1,103	1,230
Linz	520	912	1,039
Graz	473	1,160	1,287
Salzburg	394	911	1,039
Klagenfurt	244	1,214	1,341

.. (Based on: "Die wirtschaftliche Lage Triests für den österreichischen Überseehandel," *Statistische Nachrichten*, 8, 1953, 456f.)

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K. A. SINNHUBER.

THE PRESENT SITUATION IN EAST PRUSSIA

The following notes on East Prussia have been compiled from scattered reports in German and other Continental newspapers and periodicals. There has been almost no official information since 1945. Under Article VI of the Potsdam Agreement the former German province was divided between the U.S.S.R. and Poland, the Soviet Union taking the area north of a frontier running a few kilometres north of Braunsberg (Braniewo) on the west to Goldap in the east. The new frontier is usually shown

as a straight line, but its actual course seems in doubt. The former boundaries have been adjusted to suit the needs of the new authorities: in the northern, Soviet part, Memel (Klaipeda) has been returned to Lithuania. In the Polish, southern, districts, the area around Elbing (Elbląg) has been transferred to Gdańsk voivode, and parts of the Lyck (Elk) district to the Białystok voivode. Allenstein (Olsztyn) and the Masurian Lakes now form the new administrative unit of Mazuria.

In 1945, there was widespread destruction in towns and in the countryside, particularly in the railway centre of Tilsit and the port of Königsberg, which were both almost completely destroyed. The German population (2·4 million in 1939) fled or was expelled. The Russians transported Germans to Soviet Asia and Siberia, and over 800,000 are reported missing or killed. The Poles also expelled Germans, though "Masurians" were allowed to stay if they accepted Polish cultural and social traditions. About 180,000 are said to have remained behind. The Russians brought in over 500,000 people from White Russia, Ruthenia, and the Crimea (Tatars), besides 84,000 Lithuanians who were settled around Tilsit (Sovietsk) and Gumbinnen (Gusiev). The towns are predominantly settled by Great Russians. The Poles, who have done everything to make their area completely Polish, moved people from other parts of Poland; as shown by the following figures for 1947:—

<i>District in Polish East Prussia</i>	<i>Total population</i>	<i>Indigenous remaining</i>	<i>Poles resettled from:</i>	
			<i>east of Curzon Line</i>	<i>central Poland</i>
		<i>%</i>	<i>%</i>	<i>%</i>
South (Białystok) ..	53,000	3·8	17·0	79·2
East (Olsztyn) ..	42,000	25·0	25·9	49·1
West (Gdańsk) ..	380,000	9·7	19·0	71·3

Reports of the settlement of "hundreds of thousands" of Chinese and Mongols are not usually substantiated by eye-witness refugees. The re-population has, however, not been sufficient to compensate for the expulsion or flight of the Germans. In 1939, density varied from 87 persons per square mile in Masuria to 230 persons per square mile in the Elbing-Marienwerder district; but in 1947, densities varied from under 10 persons per square mile on the new frontier (Romintener Heide) to 103 persons per square mile, though higher densities occurred in the areas immediately adjacent to Olsztyn and Elbląg. Nothing is known of conditions around Königsberg (Kaliningrad) and Tilsit (Sovietsk).

The railway network, above average for this part of Europe in 1939, has been dismantled or abandoned, especially along the new frontier, where normal routes have been seriously disrupted. Dismantling has been worst in the Russian part; and the main lines from Russia to Kaliningrad and Sovietsk (via Vilnius and Kaunas) have been converted to Russian broad-gauge. The waterways have been linked to the Russian transport system, though refugees claim that roads have been allowed to fall into disrepair. The ports of Baltisk (Pillau), now a winter naval port, and Kaliningrad (Königsberg) are again linked to their natural hinterland in White Russia.

Industry has been re-started wherever it remained reasonably intact after the fighting. Sovietsk and Kaliningrad are reported to have extended railway repair and ship-building facilities. In the Polish districts, Olsztyn (Alenstein) now has a University composed mainly of Polish scholars from the former University of Wilno (Vilnius); but nothing is known of the fate of the former Königsberg (Kaliningrad) University. Cultural institutions are reported pillaged or burnt during 1945: many historic castles have been dismantled (some reports include the famous German Knights' Marienburg) while the Tannenberg Memorial was blown up by the Russians in 1945.

With the introduction of the Soviet principles of co-operative agriculture, the large German estates (characteristic of parts of East Prussia), which had not already been broken up by the Nazis, have been turned into State farms or collectives, or the land divided amongst the peasants. Most towns and villages have a tractor station. Much land is reported to be lying unused; and near Insterburg (Chernyakhovsk) vast areas (which include the famous Trakehnen stud farm and Romintener Heide) are said to have been turned into "steppe" by Kalmuk herdsmen. The once carefully tended German forests are neglected. Along the Nehrungen, fishermen from the Caspian and Black Seas have been settled. Coastal erosion and dune protection measures are also frequently reported to be neglected. Reports on the state of the canal from Kaliningrad to Baltisk conflict, though it was apparently unused until recently. Neglect of river conservation works in the Vistula delta is said to have resulted in severe flooding around Elblag and Malbork (formerly Marienburg).

(References: *Völker auf dem Wege*, G. Rhode; Kiel, 1952; *Ostwärts der Oder und Neisse*, Seraphim-Maurach, Hannover, 1949).
Cartographic Department,
Clarendon Press, Oxford.

R. E. H. MELLOR.

POPULATION TRENDS IN THE UNITED STATES A SUMMARY OF GENERAL 1950 CENSUS DATA

The continental United States had a population of 150,697,361 on April 1st, 1950, a record increase of 19 million or 14.5 per cent. since 1940. Decennial increases have been 25 per cent. for 1860-90, 20 per cent. for 1890-1910 and 15 per cent. for 1910-30. The increase of 7.2 per cent. in the 1930-40 decade was the lowest of all. The total population estimated for December 1st, 1953, was 160,957,000. This represents an increase of 9,824,000 or 6.5 per cent. since the Census date of 1950.

It is estimated by the Bureau of Census that the population on July 1st, 1975, will be between 198.6m. and 221.0m. A main factor in the increased rate of growth in recent years is the substantial increase in the crude birth rate. This was 29.8 in 1910-14 and reached a minimum of 18.18 in 1935-39. For 1945-49 it reached 24.1 and for 1950-53, 24.8. This upsurge of the birth rate since World War II will have many impacts on American economic and social problems during the coming decades.

With regard to the distinction between urban and rural populations, a new definition was made in the 1950 census. Urban populations include (a) places of 2,500 inhabitants or more incorporated as cities, boroughs and villages; (b) incorporated towns of 2,500 inhabitants or more except in New England, New York and Wisconsin, where "towns" are simply minor civil divisions of counties; (c) the densely settled urban fringes, including both incorporated and unincorporated areas, around cities of 50,000 or more; and (d) unincorporated places of 2,500 inhabitants or more outside any urban fringe. The remaining portion of the population is classified as rural. According to the old definition of 1940, the urban population was limited to all persons living in incorporated places of 2,500 inhabitants or more and in areas classified as urban under special rules relating to population and density. The main changes in 1950, involved the transference to the urban category of the whole of the urban fringe areas of cities with over 50,000 inhabitants and unincorporated places outside the urban fringe areas. These resulted in a shift from rural to urban of 6.2m. and 1.7m. respectively, and an increase of 8.5 per cent. of the urban population over the 1940 definition and a decrease of 12.2 per cent. of the rural population. Under the new definition, 96,467,686 persons or 64 per cent. of the population was classified as urban and 54,229,675 as rural. The gains over 1940 were 19.5 per cent. for urban and 7.9 per cent. for rural. The numerical gain in the urban population (14.5m.) was second only to the increase of 14.8m. for 1890-1900.

As for the changes of total population from 1940 to 1950 the West led the four main Regions with an increase of 40.9 per cent. and the numerical increase also exceeded that of the other Regions for the first time; most of the increase was in the Pacific States. The South Region increased by 13.3 per cent., the North Central Region by 10.8 per cent., and the North East Region by 9.7 per cent. California surpassed all other States both in amount and rate of increase (3,678,836 or 53.3 per cent.). Oregon and Washington increased by 39.6 per cent. and 37 per cent. respectively. The District of Columbia, Maryland and Virginia each had increases over 20 per cent. Increases over 20 per cent. are also recorded in Florida (46.1 per cent.), Michigan (21.2 per cent.) and Texas (20.2 per cent.). Only four States recorded losses—Arkansas, Mississippi, North Dakota and Oklahoma. These trends are more clearly indicated on the basis of counties. Nearly one half of the 3,103 counties lost population and nearly one fourth lost 10 per cent. or more. A map on this basis reveals that the main areas of increase are in the North East and the West. Main areas of decrease cover (i) the north-south tier of States from North Dakota to central Texas (where there were large increases on the Gulf coast and in the south-west of the State) with lesser decreases in the next north-south tier to the east; (ii) the central sections of the south-eastern States; and (iii) the Ohio valley and northern Appalachians. In summary, the slow rate of growth or actual decline in the total population in the central divisions of the country were primarily functions of decreases or only slight increases of rural population. The general character and location of the areas where the rural rate of growth exceeded the urban rate suggests that these higher rates of rural increase reflect suburban development rather than any upsurge of the farm or village population.

Two new definitions of urban areas appear in the 1950 census. The *Standard Metropolitan Area* (SMA) is a county or group of contiguous counties which contains at least one city of 50,000 inhabitants or more. In addition to the county, or counties, containing such a city, or cities, contiguous counties are included in a SMA if according to certain criteria they are essentially metropolitan in character and socially and economically integrated with the central city. The criteria relate primarily to the character of the county as a place of work or as a home for concentrations of non-agricultural workers. Criteria of integration relate primarily to the extent of economic and social communication between the outlying counties and the central county. In New England data are collected for city and town that are here administratively more important than the county. Here a density criterion was used of 150 persons per square mile, or 100 persons per square mile where strong integration was evident. The new so-called *Urbanised Areas* were delineated so as to delimit the exact extent of the actual closely built-up areas. They are the equivalent of "conurbations" as defined by Fawcett in Britain. Each such area contains at least one city with over 50,000 inhabitants in 1940 and includes the surrounding closely settled areas of the "urban fringe" by demarcating the actual limits of the thickly settled territory, as normally defined by a closely spaced street pattern. This is the physical city as opposed to the legal city and the metropolitan community. In general, it is the thickly populated core of the larger SMA, though it may extend beyond the county limits of the latter.

There are 168 SMA's with 84.5m. people, covering an area of 207,583 square miles, i.e., 56 per cent. of the total population lives on 7 per cent. of the total area. Fourteen of these had a population of over a million and together, over half of the total urban population. Their numbers increased by 15.2m. or 22 per cent., the rate of increase in the central cities being 13.9 per cent. and 35.5 per cent. in the outlying areas. In the rest of the country the overall increase was only 6.1 per cent. Of the

total increase of population of 19m., four-fifths occurred in the SMA's and nearly one half in the areas outside the central cities. The density of population was 407 persons per square mile as compared with 51 for the United States.

The 157 Urbanised Areas contained in 1950, a little less than one half of the total population and more than seven-tenths of the total urban population. Out of 62·5m. in such areas, 48·4m. lived in the central cities and 20·9m. in the urban fringe areas. The density of population in the Urbanised Areas was 5,438 persons per square mile.

The populations of the twenty largest of these Urbanised Areas are :

New York-N.E. New

Jersey	12,296,000	Washington, D.C. ..	1,287,000
Chicago	4,920,000	Baltimore	1,161,000
Los Angeles	3,996,000	Minneapolis-St. Paul	985,000
Philadelphia.. .. .	2,922,000	Milwaukee	829,000
Detroit	2,659,000	Cincinnati	813,000
Boston	2,233,000	Buffalo	798,000
San Francisco-Oakland	2,022,000	Houston	700,000
Pittsburgh	1,522,000	Kansas City	698,000
St. Louis	1,400,000	New Orleans	659,000
Cleveland	1,383,000	Seattle.. .. .	621,000

The rural population amounts to 36 per cent. of the total. This is the population living in areas outside those defined as urban. The 54·2m. people are by no means identical with the farm population. Indeed, the non-farm population as it is distinctly designated in the Census, now exceeds the rural farm population in the rural areas. The population living on farms in April, 1950, was 25,058,000 and in April, 1952, was 24,819,000, representing a decrease from 16·6 to 15·9 per cent. of the total population. There has been a remarkable drop in the number living on farms from the end of the "plateau" at about 32m. in the early thirties down to a minimum of 24m. in 1951. Though special study is needed exactly to localise these areas of decrease, they are indicated generally by the county data summarised above—namely, the great stretches of the Middle West mainly beyond the Mississippi, the inland South and the Ohio valley and northern Appalachians.

State Economic Areas and Economic Subregions are new areas devised to be used for statistical purposes. The State Economic Areas are relatively homogeneous subdivisions of States. They consist of single counties or groups of counties which have similar economic and social characteristics. There are 501 such areas. The large SMA's with over 100,000 in 1940 are recognised as distinct economic areas. Factors considered were industrial and commercial activities, plus demographic, climatic, physiographic and cultural factors, as well as factors pertaining more directly to the production and exchange of agricultural and non-agricultural goods. Their distribution is shown on a map in the publication quoted below. Economic Subregions are combinations of the State Economic Areas. They number 119 and they cut across the State lines. Data are to be published for these divisions and they will permit comparison both at the State level and for nation-wide purposes.

A map has recently been published by the Bureau of Census on the scale of 1 : 3 million, size approximately 36 × 60 inches, entitled *United States : Population Distribution, Urban and Rural, 1950*. Prepared on a white background, red symbols show the urban population as : Urbanised Areas (exact boundaries); places over 25,000, 10,000 to 25,000 and 2,500 to 10,000. Rural populations are shown by green symbols : small triangles for places with 1,000 to 2,500 and a dot for 500 persons outside



Percent. Increase in Population by Counties, 1940—1950. Map prepared by the United States Bureau of the Census.

places of 1,000 or more. The map is useful for the study of particular sections of the States but though large, it is not effective as a wall map.

(Sources: 1950 *United States Census of Population, Number of Inhabitants, U.S. Summary, Report P-A1*, Preprint of vol. 1, chap. 1, 84 pp., 1952, 40 cents; and *United States: Population Distribution, Urban and Rural*, 1950, 1: 3 million, 1953, 35 cents. Published by Superintendent of Documents, U.S. Government Printing Office, Washington, 25, D.C.).

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RECENT ECONOMIC DEVELOPMENTS WEST OF HUDSON BAY

Northern Manitoba, and to somewhat lesser extent the North-west Territories west of Hudson Bay, are sharing in the Canadian economic expansion described by Dr. Watson in his article (pp. 163-175 of this volume). After the erection of a smelter at Flin Flon in 1928, and the completion of the Hudson Bay Railroad to Churchill in the following year, economic progress was slow until the close of World War II. In 1945, Fort Churchill—a Canadian-U.S. winter warfare base—was built 4 miles east of Churchill. The construction led inevitably to an increase in railway traffic and at the same time to a rapid expansion of the town. The port has shipped increasing quantities of grain, and the 10½ million bushels that passed through in 1953, was the largest amount in any one season. The single elevator and storage bins are no longer large enough, and in October, 1953, it was reported that their capacity will shortly be trebled.

Operating out of Churchill on the west side of Hudson Bay, prospecting and mining activity has expanded rapidly. In 16 weeks in 1952, 5 geologists of the Geological Survey of Canada, using 2 helicopters instead of the more conventional canoes, mapped the geology of 57,000 square miles of southern Keewatin. The results have been so satisfactory that the same technique will be repeated in 1954 and 1955, to complete reconnaissance mapping of the west section of the Canadian Shield north to 65° N. There have also been commercial mining companies in the same district. At Ferguson Lake, 100 miles south of Baker Lake, exploratory drilling has been carried out during the last 2 years in a nickel-ore body. The results have been disappointing, and the development will probably be discontinued. The whole of this operation was supplied by air transport from Churchill. More promising has been a development at Rankin Inlet where there are nickel-copper deposits. In the summer of 1953, 2,000 tons of pre-fabricated buildings and mining equipment were shipped in to create a small settlement. This winter (1953-54) a shaft is being sunk to a depth of 300 feet and in the summer of 1954, a mill for concentrating the ore will be brought in. This will be the first large mine ever to operate in the real Canadian Arctic.

Three hundred miles south-west of Churchill a 144-mile railway was completed by the C.N.R. to Lynn Lake from Sherridon in October, 1953. At Lynn Lake a new nickel, copper and cobalt mining area is being developed. The ores will be concentrated on the spot and then the nickel and cobalt will be shipped by rail to Fort Saskatchewan, Alberta, for final processing in a new plant, using natural gas for fuel; the copper will be sent to long-established refining plants either in Ontario or Quebec. Early production will be 8,500 tons of nickel (about 5 per cent. of the free world nickel production in 1953) and 4,500 tons of copper annually.

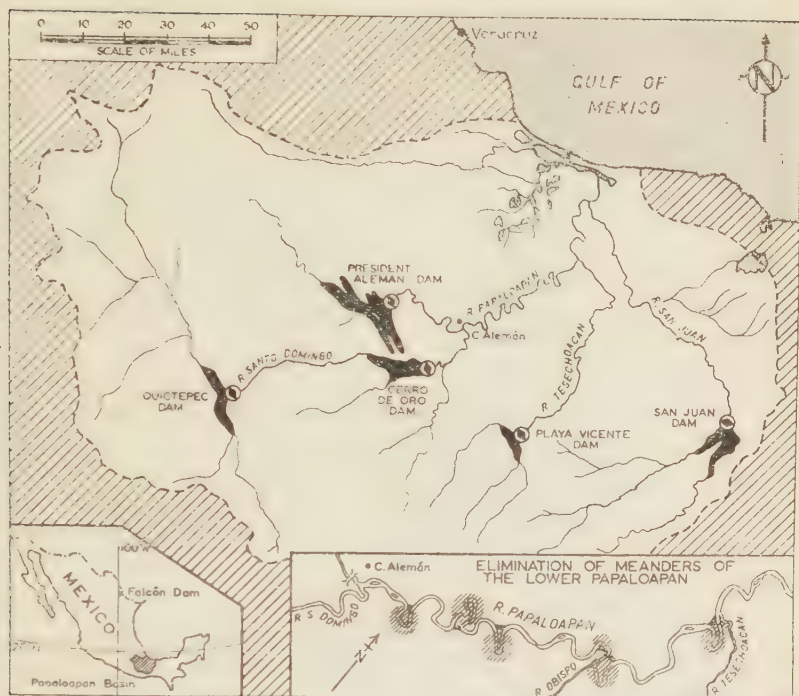
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J. BRIAN BIRD.

IRRIGATION AND POWER DEVELOPMENTS IN MEXICO

The Falcón Dam

The Falcón dam, on the Rio Grande, 75 miles downstream from Laredo, Texas, which was inaugurated by the Presidents of Mexico and the United States in October, 1953, marks the greatest achievement of the



International Boundary Commission of those two nations. Built jointly by the two republics, the cost (approximately £20 million) was shared in proportion to the amount of water to be taken by each, the United States contributing a little less than 60 per cent. of the total.

Besides irrigating 600,000 acres in Texas and 700,000 acres in Mexico, the new dam will provide 31,500 kw. of electric power on each side of the river, and contribute greatly to the solution of the problem of flood control. Five miles in length, the dam holds back a lake 60 miles long covering over 100,000 acres. The 4,000 inhabitants of the village of Guerrero, the principal settlement inundated by these waters, have been accommodated nearby in the newly built town of Nuevo Guerrero.

The Papaloapan Valley

Considerable progress is also being made on the Papaloapan valley project in the states of Vera Cruz, Oaxaca and Puebla, which was begun in 1949. The principal dams under construction are on the Tonto, Santo Domingo and San Juan tributaries of the Papaloapan, and when completed, a large jungle area, over 15,000 square miles in extent, will be available for agricultural and industrial development. Combining the three objectives of flood control, irrigation, and power production, this Mexican "TVA" is the largest integrated regional development project being undertaken in Latin America.

Previously a region frequently devastated by floods, sparsely settled, and backward technically and culturally, it is now the scene of multiple activities of the Papaloapan Commission. These embrace river canalisation, road construction, agricultural experiments, water supply installation, school building, and the creation of new towns, the most important of which is Ciudad Alemán, the regional capital, near the confluence of the Santo Domingo and the lower Papaloapan. Re-settlement of families

from other parts of Mexico, where there is heavy pressure of population on meagre land resources, will effectively incorporate the Papaloapan basin into Mexican economic life for the first time.

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GILBERT J. BUTLAND.

DEVELOPMENTS IN NORTHEAST ZULULAND

Zululand, that part of Natal lying beyond the Tugela and east of the boundaries of the pre Boer War 'New Republic,' is still locally recognised as a geographical unit. Its western upland parts are densely peopled, but the Zulus have never fully occupied the lower eastern side. The Natal sugar belt extends into the south of the Zululand plain, but the more tropical (largely within Köppen's *Aw* climate) and generally drier north remains undeveloped, scantily peopled by Zulu and related tribes. Though much reduced, malaria and nagana (animal sleeping sickness) are still endemic.

Hitherto, northeast Zululand has been one of the least developed parts of the Union. The road and railway along the Lowveld to Swaziland is the only good routeway, and except for the cattle ranches of the Lowveld, the area contributed almost nothing to the economy of the Union except as a minor source of migrant labour. Recent years, however, have seen considerable developments in the Lowveld. Two irrigation schemes have been brought into operation where the rivers Mkuzi and Pongola emerge from the uplands. The Pongola scheme, which is the larger, has become an important sugar area; a mill is soon to be erected. Cultivation without irrigation has also been extended: the semi-arid lowveld is well suited to sisal and hemp, and several hundred acres have been planted since Indian sanctions against the Union have made it necessary to find a substitute for jute. Some drought-resistant sugar cane has also been planted.

Much larger schemes are under consideration for the Coastal Plain. In August, 1953, it was announced that inquiries had been made regarding its irrigation possibilities, and in terms of the Group Areas Act, to re-apportion land between races. Plans were announced in September for a dam in the Pongolapoort, in the Lebombo, to irrigate wide areas in the Mokhatini Flats for sugar. Large scale afforestation schemes are planned for the sandy eastern side of the plain. Experimental afforestation in the southern part of the Zululand plain, at Kwa Mbonambi, has shown the soil to be suitable for gums and pines, and a paper and cellulose industry is being built up in south Zululand.

Closely allied to these proposals is the plan for a new port at Sordwana Bay together with a railway to Piet Retief in the eastern Transvaal. The new line and port are intended primarily to serve coal export from the Transvaal fields. There is no natural harbour at Sordwana Bay, which is a slight indentation in a sandy coast, poorly protected by a reef of Pleistocene sandstone and backed by a dissected sandy country with small lakes and marshy hollows. The proposal involves the creation of an artificial harbour in a marsh behind the coastal dunes, with a possible later extension to a small, shallow lake a mile inland, which would need deepening. Formidable difficulties include the sandy hilly nature of the site with attendant problems of rail and road construction, absence of any building stone within 50 miles, and remoteness from all services. Access by rail would be through Mkuzipoort, which is a gorge 1,500 feet deep, only the width of the river at the bottom and with great incised meanders at its lower end. To justify such a very expensive scheme, a great increase in coal exports would be called for. With home demand increasing faster than production, these have fallen greatly from the 1945-6 figure of 4,516,058 tons to only 1,542,219 tons in 1951-2. Even if the opposition of South African Railways to shipping coal coast-wise from Transvaal to the Cape were overcome, it is difficult to see how total traffic could be raised above 6,000,000 tons for some years, to be shared between



NORTHEAST ZULULAND

To the east of the northerly part of the Uplands of Natal lies the Lowveld, a semi-arid lowland, with dry thorn-bush and grass, the hottest part of the Union of South Africa, with a small native population. The Great Escarpment (Drakensberg) lies some 100 miles west of the edge of the uplands.

The Lebombo Range, with a 1,500 ft. scarp facing west, is formed of eastward-dipping basalts and rhyolites. Superimposed drainage has pierced it with a series of deep *poorts*. Along the summit is a discontinuous series of tablelands about 2,000 ft. high, comparatively healthy.

The Coastal Plain is actually a marine platform elevated to 300-450 ft., with Cretaceous and Pleistocene surface deposits. It is a sandy, bush-covered expanse with the grassy Mokhotini Flats in the west and, near the coast, a grassy sand plain with clumps of dwarf palm and wild banana. The submergent coast zone and the high coastal dunes are wetter, with dense semi-evergreen bush. The plain is sparsely inhabited, chiefly by Tonga people, and with almost no whites, and is a highly malarial area, almost inaccessible except in winter.

Lourenço Marques, Durban and Sordwana Bay. Nevertheless, final surveys are being made.

Some additional traffic for the railway is expected from the other developments. The Lowveld-Piet Retief portion will serve the Pongola irrigation area, and also provide a second line into Natal from the Transvaal. Extension of the sugar area—another industry in which home demand has outpaced growing production—is also a sound and indeed necessary development, though there still remain more accessible undeveloped areas in southern Zululand. Afforestation of the plain will go far toward making good the Union's deficiency in timber and wood products, and seems at present the only use for this land.

If all this is done, the Tongas, whose land was divided between Mozambique and Zululand in 1875, will be dispossessed of most, if not all, their remaining land. The Union Minister of Lands has stated that "Tongaland borders on Swaziland... part of the territory is a coastal area and it would be most unwise to hand over (*sic*) this coastal belt to natives." European settlement of this remote corner is held to be desirable for strategic reasons, and it is to be remembered that this is the coastline toward which the Boer republics reached in the 19th century, advancing then as far as the Lebombo before being stopped by malaria and the British. These plans have also a political significance, attention to which was drawn by the very unusual aerial visit of inspection made by Dr. Malan to Sordwana Bay, in August, 1952. Preliminary air surveys and photogrammetric mapping have already been undertaken. (This note is based on two visits to the area and on official sources).

University of Natal, Durban.

H. C. BROOKFIELD.

GEOGRAPHICAL ASSOCIATION

DR. O. J. R. HOWARTH

1877-1954

It is with profound regret that the Association learns of the sudden death of its immediate Past President, Dr. O. J. R. Howarth, O.B.E. on June 22nd last. At its meeting on April 21st at Exeter, Council had given expression to the high esteem in which it held his experience and advice by electing him one of the Trustees of the Association. An obituary notice will appear in our November issue; here we may only tender the deep sympathy of all members of the Association to Mrs. Howarth.

THE PRESIDENT, PROFESSOR WOOLDRIDGE

Members will be grieved to learn that our President, Professor S. W. Wooldridge, was taken suddenly and seriously ill during the Whitsun weekend. He has since made a spectacular improvement and has been removed from hospital to a convalescent home. We send him our good wishes for a continued and rapid recovery.

SPRING CONFERENCE, EXETER, APRIL 20th-24th, 1954

Easter, and therefore the date of the Spring Conference, fell late in April this year, and we were thereby afforded welcome opportunities to enjoy the full glories of the spring colours and bloom of the South West, enhanced for us by a spell of weather that brought unbroken sunshine with clear visibility at almost all times. The Devonian countryside became in these conditions a geographer's paradise that those who came from the grey drabness of the industrial and dull north appreciated all the more.

We were privileged to hear two most stimulating "background" lectures (which will be published in a forthcoming issue of *Geography*)—one, on the personality of the South West, by Professor Davies, and the second, on the physique of the South West, given by Professor Wooldridge; and these, with further lectures given by Mr. Shorter (on the site and situation of Exeter), by the Town Clerk (on the history of the Guildhall) and by Mr. John Lloyd (on the Cathedral), were a valuable complement to the series of very fine local and regional excursions. These took us far afield to Exmoor, Dartmoor, Plymouth and Chesil Beach, according to our geographical interests, and we are very grateful indeed to the members of the Exeter Department of Geography and to members of the Exeter local branch of the Association for the splendid arrangements made on our behalf.

The study of the local region was supplemented by one lecture associated with a distant field of study, when Professor Peel addressed us on the Leeds University expedition to the Ruwenzori Mountains, illustrating his lecture with a fine set of coloured lantern slides and a film.

We are greatly indebted to the Right Worshipful the Mayor of Exeter, Councillor Bovey, and to the Sheriff, Alderman Daw, for their hospitality and for the privilege of attending a reception given to our members in Exeter's historic old building, the Guildhall, and we were delighted to welcome these and other Civic guests at a reception, dance and social evening held in the Washington Singer Laboratories during the conference. This function, organised by the local branch, is surely the most ambitious and most lavish entertainment of the kind ever organised at one of our conferences and it was certainly a "highlight" immensely enjoyed by those present; we congratulate the local branch on its enterprise in this direction.

Throughout the meeting an exhibition of material supplied by County Planning Authorities and publishers was open. The display of local maps and models was especially appreciated by members.

To the local geographers and especially to Mr. C. J. Dakin, President of the Exeter Branch, and Mr. C. Kidson, the able and energetic Honorary Conference Organiser, who did so much to make this conference a very memorable one, we

extend our warmest thanks. We extend thanks also to the authorities at the University College of the South West, for generous permission to use college premises and halls of residence for our meetings, which facilities and comforts in no small measure added to the success of the conference.

ELECTION OF TRUSTEES

At the meeting of Council held on April 21st, 1954, Professor L. Dudley Stamp and Dr. O. J. R. Howarth were elected Trustees of the Association in succession to Lord Rennell and the late Sir John L. Myres.

GIFTS FROM LIFE MEMBERS

The Honorary Secretary extends warmest thanks to all Life Members who responded so promptly and generously to an appeal made to Life Members for donations. The sum subscribed between April and June amounts to £94 18s. and will be placed in the General Reserve Fund. The names of subscribers will be published in a forthcoming issue of *Geography*.

SUBSCRIPTION RATES DUE SEPTEMBER, 1954

In view of the position regarding the changes in subscription rates, approved by the Annual General Meeting in January last, the executive committee at a recent meeting made the following recommendations: "that for the year 1954-55 members be invited to contribute at the proposed new annual rate of one guinea (as 12s. 6d. subscription and 8s. 6d. donation) pending the passing of the proposed change at a second Annual General Meeting (a statutory requirement) to be held in January, 1955." It was further agreed that for the time being student membership rates should remain unchanged.

Members who pay annual subscriptions are asked to send payment, using the renewal of subscription form supplied with this issue, as soon as possible and, preferably, by September 1st.

SUMMER SCHOOL, 1955, IN BRITTANY

We shall be grateful if members who are interested in the proposed Summer School to be held in Brittany during August, 1955, under the direction of Professor E. G. Bowen (in collaboration with Dr. Pierre Flatrès), will inform headquarters as soon as possible, if they have not already done so, to enable us to assess costs and accommodation requirements.

SCHOOL AND BRANCH VISITS TO HEADQUARTERS AND THE LOCAL REGION

The Easter vacation and the Summer Term have brought renewed activity in connection with branch and school visits to headquarters during field excursions in North Derbyshire and in the Sheffield district. On May 22nd a party of members from the York Branch spent a short time in the library to view the panorama of the city from our windows and to enjoy refreshment before proceeding on an excursion in the Peak District which had been arranged and was led by members of the Sheffield Branch. We learn that the Sheffield Branch is shortly to pay a reciprocal visit to York and we are pleased to hear of such inter-branch co-operation.

On April 9th, a party of upper school girls from William Gibb's Girls' School, Faversham, led by their geography mistress, Miss M. Dixon, visited headquarters during a field course held in North Derbyshire. After a short talk by the Assistant Secretary on Sheffield's site and history the party proceeded on an industrial visit arranged for them in the city.

A month later, we had the pleasure of assisting a small party of upper school girls and boys from Pinner County Secondary School, led by Mr. H. S. Thurston, in making a geographical excursion in the city, using a private coach to follow a carefully selected route to reach features and viewpoints, after an introductory talk at the excellent viewpoint, Sky Edge (the escarpment below which headquarters is situated). Members may be interested in the programme of this field

meeting, which was based at Hope, Derbyshire, and with which we were able to give practical assistance in connection with accommodation, and suggestions for areas for fieldwork and industrial visits. It included stream survey near Lose Hill, a visit to a limestone cavern at Castleton, a walk over the gritstone moors for a conducted visit to Ladybower Dam, group work on land utilisation in Lower Edale and Hope Valley with a conducted farm visit, a traverse of the Carboniferous Limestone as far as Buxton, followed by a visit to a textile (rayon) mill at New Mills, group urban survey at Bakewell, a tour of Sheffield, and, lastly, a visit to a colliery in the South Yorkshire coalfield. The coach which brought the party from Pinner was of very great value in adding to the mobility of the party. Despite poor weather conditions, Mr. Thurston felt that the field class had gained something of real value from their outdoor practical geography in this area. For us it was a pleasure to meet and work with keen young geographers in our own district.

We are pleased to put at the disposal of members wishing to plan a field class in this vicinity the information and advisory services of headquarters staff and to offer to them the hospitality of our premises and the advantage of our fortuitously sited viewpoint.

CHAIRS OF GEOGRAPHY

The Association welcomes the creation of a new chair of geography in the University College of Swansea and an appointment to the chair of geography formerly held by Professor Rishbeth at the University of Southampton, and offers its cordial congratulations to Dr. W. G. V. Balchin and Mr. F. J. Monkhouse on their elections to these appointments. We extend our congratulations also to Mr. Norman Pye who has been appointed to the chair of geography at University College, Leicester, in succession to Professor P. W. Bryan.

THE PLACE OF FIELD STUDIES IN SCHOOL

A week-end residential course on this subject has been arranged by the University of Nottingham Institute of Education in conjunction with the Geographical Association, to be held from September 3rd to 5th, 1954, at Wortley Hall, University of Nottingham. The course, which will be conducted by Professor K. C. Edwards, Head of the Department of Geography at the University, and Mr. R. C. Honeybone, Head of the Department of Geography in the University of London Institute of Education, will include lectures, discussions, a full-day local excursion and an exhibition of films. The inclusive fee for residents will be £3 10s.; non-residents can be registered for the course for a fee of £1. Programmes may be obtained from The Director, Institute of Education, Adams Hill, Derby Road, Nottingham, to whom applications, stating whether for a resident or a non-resident place, and accompanied by a deposit of 10s., should be sent (cheques payable to the University of Nottingham). As this course has been announced since April, early application for places is now recommended.

ANNUAL CONFERENCE, 1953

REPRINTS OF PROFESSOR DARBY'S LECTURE

Reprints of the lecture "On the Relations of Geography and History," published in the *Transactions and Papers*, 1953, Publication No. 19 of the Institute of British Geographers, may be obtained from Mr. B. H. Farmer, St. John's College, Cambridge, price 2s. 3d., post free. Professor H. C. Darby gave this lecture to a Joint Meeting of the Royal Geographical Society, the Institute of British Geographers and the Geographical Association on January 2nd, 1953, during the Association's Annual Conference in London.

GEOGRAPHICAL ANTHOLOGIES

Anthologies of descriptive passages for use in the teaching of geography are now being prepared. Mr. F. J. Campbell who is compiling the volumes will be very glad to receive from members information regarding descriptive extracts from books that teachers of our subject have found especially helpful, so that the final choice of extracts may be made using as wide a field of experience as possible. Members should send a copy of the extract, and/or should give the title of the book, author, page numbers, date of publication and publishers.

Descriptive passages relating to the Mediterranean Lands and the Near East are at present urgently needed. Communications regarding this matter should be sent direct to Mr. F. J. Campbell, whose address is: 54, Greystones Avenue, Sheffield 11.

REVIEWS OF BOOKS.

WITH very rare exceptions, books reviewed in this journal may be borrowed from the Library by full members or student library members of the Association.

Geology and Scenery in Britain. T. G. Miller. 14.25 × 22.25 cm. 223 pp. London: B. T. Batsford Ltd. 1953. 18/-.

This well illustrated book is recommended to all concerned with the geography of southern Britain. In it the author treats with good effect of the first of the three aspects—structure, process, stage—in terms of which the physical landscape is most readily and completely comprehended. Basic principles of geology, the origin and characteristics of rocks and the palaeogeography of the British area receive adequate if necessarily brief consideration in Part I. The structural bases of English and Welsh landscapes are dealt with in Parts II and III (Highlands and Lowlands), which comprise concise, explanatory descriptions of some nine geological regions. These are well chosen, but they are not synonymous with “scenic” or morphological regions; and in spite of the reference to “the shape of the land itself” (p. 19) the reader will look in vain for either map or description of those regions of Britain possessed of morphologically coherent characteristics. Thus while “Old Wales” (Pre-cambrian and Lower Palaeozoic Wales) is geologically a unit, morphologically or scenically it merits further subdivision on the basis of process into *mountain upland* (Snowdonia) and *plateau upland*.

It is at this absence of any kind of regional division based on “the shape of the land” that geographers will be most disappointed; their disappointment may indeed lead to dissatisfaction with the primary grouping of the regional descriptions under Highlands and Lowlands. As suggested for Wales, the units of Highland Britain could with good reason be classed as either plateau or mountain uplands; and it is not only with regard to Highland Britain that the author, like many physical geographers, appears reluctant to elaborate Mackinder's brilliant generalisation. It is long since that attention was first drawn to the significance of the Thames-Kennet line as a structural and morphological boundary; surely some recognition of the two Lowland Britains as of the two Highland Britains is to be looked for in books dealing with geology and scenery.

R.S.W.

The Evolution of the English Farm (2nd revised edition.) M. E. Seebohm. 14 × 22 cm. 356 pp. London: Allen and Unwin Ltd. 1953. 30/-.

The first edition of this very useful work was reviewed at length in *Geography*, vol. xiv, 1928, p. 550. The two chapters on the Neolithic Farm and the Bronze Age have been partially rewritten, while the original chapter on the Early Iron Age and the Celtic Farm has been divided into two sections and the material has been rearranged. The improvements in farming techniques have led to considerable revision of the closing chapter, in which due note is taken of the provision of winter feeds, increased crop yields and mechanisation. The author has included some additional illustrations. The book serves as an excellent introduction to a very broad subject and this revised edition will be welcome to many interested in the history of our agriculture.

H.C.K.H.

A Short History of Wool and its Manufacture. E. Lipson. 14 × 22.25 cm. 205 pp. London: W. Heinemann. 1953. 12/6.

No geographer need be reminded of the importance of the wool trade and of the wool manufactures in the economic history of these islands and in the development of the English scene, both rural and urban. The publication of Mr. Lipson's *Short History* should therefore be welcome. It is divided into two sections, the first, and not least interesting, on wool itself and the wool trade, the second and larger section on the wool manufactures from the earliest times until the present day. The book concludes with a rather slight appendix on the geographical distribution of the industry in England at the various periods

of its development. The interest of the text is enhanced by the numerous quotations from a wide range of contemporary literature, the apposite use of which is an example to those of us who keep the various academic subjects in very watertight compartments. The book might well find a place in the library of any school in a district with a history of wool manufacture, although its usefulness is reduced by the lack of any adequate guidance for further reading.

T.H.E.

Juvenile Labour in Agriculture. Report on an enquiry by J. Carter and G. P. Hirsch. Institute for Research in Agricultural Economics. 20 × 26 cms. 34 pp. Oxford: University of Oxford. 1952. 3. 6.

This report describes a pilot survey, in 1948, of the supply of agricultural workers under 18, and of the type of work done by them. A preliminary section indicates the importance of juvenile labour in agriculture, the constancy of recruitment and the subsequent wastage. The enquiry, which covered England and Wales, is then summarised; it suggests that the bulk of recruitment is from rural areas, and that outside large farms there is little prospect of progress up the farming ladder. A discussion of the data concludes that there is still an unsatisfied demand for juvenile labour. Numerous choropleth maps and tables supplement the text.

J.T.C.

Census of Woodlands 1947-1949. Woods of Five Acres and Over. Scottish County Details. Forestry Commission, Census Report No. 4. 20 × 32 cm. v + 187 pp. London: H.M.S.O. 1953. 10/-.

This report is a further supplement to Report No. 1, and presents, for each Scottish county, detailed areal statistics of the composition and character of the woodland. As in the case of the Welsh Report comparison between counties, country and Great Britain is possible in every respect. The gathering of the information, its significance and some conclusions are discussed in the first Report. The Orkneys, Shetlands and islands of Ross and Cromarty are omitted. So are the Small Isles of Inverness which are not without their share of woodland.

R.C.

Census of Woodlands 1947-1949. Hedgerow and Park Timber and Woods under Five Acres, 1951. Forestry Commission, Census Report No. 2. 15 × 24.25 cm. 88 pp. London: H.M.S.O. 1953. 5/-.

In 1951 the Forestry Commission completed a census covering the hedgerows, small woods and unproductive larger woods which had been wholly or partly passed over in the earlier major survey. A description of the sampling method devised because of the widespread and vast nature of the task forms an interesting part of the report, appendices and illustrations. The assessment of hedge and park timber is based on a sample examination of one acre in every 7,868 in Great Britain and by area 0.92 per cent. of the small woods were inspected. Among the conclusions presented is that over four-fifths of Britain's hedge and park timber is in England where it amounts to over a quarter of the growing timber. In Britain as a whole a fifth of the timber is in parklands and hedges. The relative importance of small woodlands in Wales is shown and it is disturbing to find that a third of the area under small woods in Britain is unproductive.

The oak dominates the hedges with ash and elm in support. In Scotland, however, beech displaces oak as the leading hedgerow tree and in its small woods three non-indigenous species, sycamore, beech and lime are prominent, the first two being more important than the native pine and the oak. In the small woods of England and Wales the oak, beech and sycamore lead.

R.C.

The Kentish Stour. R. H. Goodsall. 14 × 22 cm. xi + 229 pp. London: Cassell & Co., Ltd. 1953. 15/-.

This is a book of local history, arranged as a source to mouth traverse of the Great Stour. By excluding much well-worn material which is readily available elsewhere, it has been possible to introduce much that is usually eclipsed, as well as up-to-date observations ranging from industry to archaeology, and to bird-life on the subsidence lagoons at Chislet Colliery. Notes on views and accessibility, as well as a mine of information on waterside mills, parish churches and country estates, help to make this an excellent source book for planning field-work. It is recommended for all school libraries in East Kent, as well as for more distant schools using this area for school journeys.

A.C.

The Fens. A. Bloom. Regional Books Series. 14 × 22 cm. xii + 325 pp. London : Robert Hale Ltd. 1953. 18/-.

As a native of Fenland, who has farmed there with enterprise and intelligence, the author writes of shrinking and blowing peat, of floods, eelworms and the many peculiar problems of this precariously rich agricultural region, with the genuine authority of practical experience. The value of his volume to geographers rests chiefly in its wealth of factual detail, particularly that concerning Fenland farming in the last few decades. Unfortunately the difficult exercise of producing a companionable omnibus in a conversational style appears to overtax Mr. Bloom's literary powers. Much of his prose is ponderous and raw and the narrative is marred by its spicing with a naïve philosophism. Intentionally or otherwise, the book has little shape or direction, either historical or geographical. The double-page "Sketchmap" is a monstrous example of everything a map should not be. Twenty-five well-chosen, full-page photographs, and the evident enthusiasm of the author, constitute a partial redemption. F.A.B.

The Wessex Heathland. Regional Books Series. R. Wightman. 14.25 × 22 cm. viii + 191 pp. London : Robert Hale Ltd. 1953. 18/-.

This pleasant book has been written by one whose love of the area is evidenced time and again in his detailed knowledge of its features. At the same time, the author shows us the vital importance of the physical background in the development of these heaths, their beauty and their limited economic value, which he would like to increase with the aid of Government backing such as the Groundnut Scheme "enjoyed."

Mr. Wightman introduces delightfully the literary associations with his native area and protests with some force at the defamation of his heathland by the War Office and the clay mining interests. Many interesting historical details are quoted, including a whole chapter on the development of the administration of the New Forest from the days of the Justice in Eyre to the modern New Forest Committee, the Forestry Commission and the New Forest Act of 1949. H.C.K.H.

Devonshire Studies. W. G. Hoskins and H. P. R. Finberg. 14.5 × 22.5 cm. 470 pp. London : Jonathan Cape Ltd. 1952. 36/-.

This collection embraces studies of two kinds—those concerned with aspects of English history localised in Devon and those dealing with the history of characteristic elements of the Devonshire landscape. All twenty-five are of absorbing interest and not a few are of considerable value to the geographer. Thus, in *The Making of a Boundary* we learn why the Tamar, the natural western frontier of Devon, is not in fact coincident at all points with the county boundary ; in *The Borough of Tavistock* we are given an account of the origin and early growth of this 12th or 13th century borough which owes its being "to acts of creation as deliberate as those which have originated Letchworth and Welwyn" ; in *The Wealth of Medieval Devon*, *The Open Field in Devon*, *The Making of the Agrarian Landscape* and *The Estates of the Caroline Gentry* we are told the story of the evolution of urban and rural Devonshire. These are but a few examples of the sound geography that appears in this volume. As geographers we are greatly indebted to the authors for these valuable studies, so obviously the outcome of much careful research in library and field. R.S.W.

A Scientific Survey of Merseyside. British Association for the Advancement of Science. W. Smith (ed.). 18.5 × 24.5 cm. xv + 299 pp. Liverpool : Liverpool University Press Ltd. 1953. 21/-.

Geographers have come to look forward to the production of important geographical works on the occasions of the annual meetings of the British Association for the Advancement of Science and the *Scientific Survey of Merseyside* solidly maintains the high standard established in recent years. The Survey has been planned to delineate the character of Merseyside and its District. Only by reference to many fields of knowledge can this distinctive region be fully comprehended and there are more than a score of contributors, each a specialist in his own field. Although each has drawn in particular features they have collectively, under the skilled editorship of Professor W. Smith, created a picture of Merseyside that is a valuable contribution to our British regional literature. It is not possible in a short notice to do more than indicate that the first part

of the Survey deals with the panorama of nature (geology, landforms, climate, physical oceanography and biology) while the second and third parts deal with the works of man in Merseyside proper and the Merseyside district respectively. This is a volume that school and college libraries should certainly possess.

N.P.

Nottinghamshire. County Books Series. C. Marsden. 14 × 22 cm. 325 pp. London: Robert Hale Ltd. 1953. 18/-.

The general reader (once he has pardoned the author for offending the intelligence in the first chapter by a tortuous and wholly unnecessary argument to justify his subject) will find in this book a full and attractive account of Nottinghamshire. The emphasis, as usual, is historical and it is unfortunate that no serious attempt is made to deal with the physical setting of the county to which so much of the human story is closely related. Though there are frequent lapses in style, the narrative, into which is woven a rich and intricate pattern of fact and explanation, is never tedious and often absorbing. The chapters on the countryside which nurtured Byron and D. H. Lawrence have a particular appeal, while the author's special interest in architecture gives added value to the pages dealing with the county's notable buildings, its churches, abbeys and the great ducal mansions. A good index makes the volume useful as a reference book, while the plates, though somewhat restricted to architectural subjects, are excellent. On points of fact the book is generally accurate and commendably up-to-date but there is one important though apparently unavoidable omission. The two Nottingham newspapers mentioned on page 53, for long the only morning dailies published in the East Midlands, were amalgamated since the book was written. Thus, to the regret of many, the long-established *Nottingham Journal*, founded in 1710, has lost its independent existence.

K.C.E.

County Durham. Derbyshire. (The Buildings of England Series). N. Pevsner. 11 × 18 cm. 279 and 282 pp. respectively. London: Penguin Books, Ltd. 1953. 4/6 each.

In the introductory chapter to each of the above additions to *The Buildings of England* series, Professor Pevsner summarises the major historical periods of each county, their contemporary architectural styles and use of local materials. The main part of each volume forms an inventory of the principal buildings, church, castle, hall, mill or humble farmstead, in each county. Although the descriptions are technical an illustrated glossary at the end explains architectural terms for the benefit of the layman. Both books are lavishly illustrated with sixty-four pages of photographs, numerous line-drawings and a small reference map. In pocket size volumes of such vast scope one may expect omissions. Thus, although a section is devoted to the new town of Peterlee, there is no mention of the fine fifteenth century Exchequer in Durham City nor of the horse-wheel sheds, with their picturesque pantile roofs, so characteristic a feature of many Durham farmsteads. In the proof-reading of both volumes several errors in the spelling of place-names have been overlooked. However, these minor criticisms do not detract from the excellence of both books which will be of distinct value to all who study the history and historical geography of Derbyshire and Durham in the field.

H.T.

The Lowlands of Scotland: Glasgow and the North. County Books Series. M. Lindsay. 14 × 22 cm. xviii+267 pp. London: Robert Hale Ltd. 18/-.

This volume covers a curious area, including Glasgow, yet excluding Renfrew and Lanark, including Fife and Angus, yet excluding Perth and Kincardine. The waywardness of county boundaries is but partial explanation, for the same author has in hand "Edinburgh and the South" which will deal with the remaining lowland counties.

In the event, this curious sub-division is of little consequence for the book is a series of historical and literary anecdotes for which topographic description provides little more than a frame. This is a pity, for when it does appear, particularly with respect to Glasgow and the west, the topographic writing is pleasant and to the point. But since the tortuous course of Scottish history is far from clear, even to many Scots, to others, the multiplicity of historical incident and the mysteries of ecclesiastical schism may perhaps be tedious.

The book, then, has little to recommend it from the geographical point of view. But it has style and character and contains a wealth of historical and literary detail. Whilst it is natural and good to see the author expressing his own opinions forcefully, as regards Whitehall, for instance, occasionally he offends, as in his gibe at the Orpheus Choir.

The illustrations are excellent; a few are of geographical interest. The map is crudely drawn and somewhat misleading. H.A.M.

The Northern Marches. Regional Books Series. Cledwyn Hughes. 14 × 22 cm. viii + 218 pp. London: Robert Hale Ltd. 1953. 18/-.

This book is a general account of the author's impressions of parts of the Northern Welsh Border, with many passages of charming and colourful writing and lavish half-tone illustrations. It is, however, despite its patches of valuable information, in no sense scientific either in treatment or in layout. The Northern Marches in which the palatine county of Chester has played so inherent a part are here so treated as almost to exclude that county. There are too numerous lesser inaccuracies also, but the unhappiest passages in the opinion of the reviewer are those which voice the desire to perpetuate Welsh separateness, rather than to foster that regional diversity within unity which is the aim of the geographer, and which is one of the glories of the Borderland. D.S.

Snowdonia: the National Park of North Wales. The New Naturalist Series. F. J. North. B. Campbell and R. Scott. 15 × 22 cm. xviii + 469 pp. London: Collins. 1949. 21/-.

It is unlikely that this note should be the first to draw any reader's attention to *Snowdonia* for it has been published these four years or more. Three distinguished authors in their physical, ecological and historic sections respectively, have captured the true spirit of this probably best known and best loved part of Wales. Dr. North, with his ability to make the complex seem simple, gives insight into 'that grand epic written by the finger of God upon the strata of the earth,' Bruce Campbell, in his account of the natural history ranges from the wrens of the semi-alpine zone of "Eryri" to the woodlands, lakes, rivers and cultivated farmland of the lowlands. Dr. Scott in the human field, writes with enthusiasm on the economic and social development of northwest Wales and considers those political movements that have had a decisive effect on the evolution of life and manners in the region.

As with the other volumes of the New Naturalist series the photographic illustrations have been well chosen and are most effective, particularly those in colour by John Markham. The maps and diagrams are good and of great assistance to the reader. G.M.H.

A Geography of Europe. G. W. Hoffman. 15.5 × 23 cm. ix + 775 pp. London: Methuen & Co., Ltd. 1953. 52/6d.

To summarise the geography of Europe in one volume is in many ways no easier for ten authors than it is for one. A tenth of the world's land and a fifth of its people backed by two thousand years of history do not readily submit to such compression. Yet Professor Hoffman and his collaborators have contrived an unusual combination of past and present, regional and systematic, fact and interpretation, in a book which has much to offer to readers on both sides of the Atlantic. In style and conception, it is more American than European; wide in scope, easy to read and in the treatment of economic problems looking more to the future than the present. There is, however, a good deal of variation in the style and content of different chapters. Thus that on Western Europe is rhetorical and expansive, unmistakably French, while that on the British Isles is methodical, succinct and typically British. We have here, not merely a competent summary of the regions of Europe, but one which illustrates, region by region, the principal schools of geographical thought. The overall layout is pleasing. Introductory chapters on the Historical and Physical Backgrounds (in that order) are followed by seven regional studies and a final chapter on Europe in the World's Economy. Regional chapters conform to the general plan. In each case, physical and historical aspects and regional divisions are treated first as a background for fuller discussion of population problems and economic life in each country. The illustrations are disappointing. Some of the maps are unnecessarily simplified—e.g., maps of agricultural regions with no indication of the actual distributions on which they are based, and industrial maps with letters and symbols whose

precise relation to the shaded industrial areas is often far from clear. There are however, many useful maps, diagrams, photographs and references and a statistical appendix. Because of its human bias, this book cannot fail to attract students and teachers either as a framework for more detailed studies or as a background to the discussion of contemporary European problems. No more could be expected of any one book on so vast a subject. A.J.H.

The Population of Switzerland. K. B. Mayer. 14.5 x 23.5 cm. xii—336 pp. London: Colombia University Press Ltd. (Geoffrey Cumberlege.) 1953. 32/6.

This book is an orderly analysis of the demographic statistics of a country unique in Europe in its linguistic and ecclesiastical variety, in its traditional federal structure and in its high degree of industrialisation in a predominantly mountain environment. The format is attractive and some of the issues raised are important but, in view of the purely statistical approach, continuous interest is not easily sustained. Geographers will find the work a convenient reference book and a guide to Swiss statistical material. The documentation is good.

Population trends over the last six centuries in Switzerland present a picture of western Europe in microcosm. The relative stability of the late Middle Ages was succeeded after 1750 by a steady increase in population associated with the development of the cotton, silk and watch industries, at first on a predominantly domestic basis. There followed the familiar impact of the New World on the rural economy (1870–1890) and the steady decline in both death and birth rates during the last two generations. Switzerland has also experienced a recent resurgence in birth rates but this may be only a temporary feature following the postponement of marriages during the pre-war years of depression. The federal government has already thought it appropriate to take some steps in the field of family allowances and subsidised housing.

The analysis of the internal social structure of Switzerland is of special interest. How have the Swiss succeeded in integrating diverse cultural units into a stable and harmonious society? The author is not concerned with the characteristics of the geographical milieu nor with the efficacy of external pressures but he does show that the miracle has been easier to perform owing to the remarkable stability in the proportions of linguistic and religious groups during the last century. Full integration is a relatively modern phenomenon and has not been achieved without stress—and even internecine warfare. Although industrialisation and urbanisation have promoted internal migration and intermarriage there is still a remarkable correlation between non-agricultural occupations and protestantism in Switzerland (p. 155).

A discussion of internal migration 1942–4 shows that the greatest *turnover* occurs in the cities with 10,000–30,000 inhabitants although the net *gain* of this group was only five persons per thousand (p. 267). “Apparently the small cities serve as entrepôts, receiving migrants from the smaller communities and giving up substantial parts of their population to the larger cities.”

Rural depopulation has been experienced particularly in the mountain areas of Grisons and Ticino but it is much less catastrophic than in Italy or France owing to the importance of the tourist industry and transit trade. Serious losses from Appenzell, St. Gall and Neuchatel are related to the collapse of the embroidery trade and the depressed condition of watch-making. It would appear that the total population of Switzerland may reach five millions during the present century. P.R.C.

The Johannesburg Story. F. Addington Symonds. 13.5 x 20 cm. 240 pp. London: Frederick Muller Ltd. 1953. 15/–.

Johannesburg is a vulgar, strident and exciting city, which has grown from a gold-mining camp in less than seventy years. It is to-day the greatest industrial centre in Africa, and continues to grow. Mr. Addington Symonds has captured the spirit of this remarkable growth, through a graphic and robust review of its history, which is mainly the story of the clash of personalities and ambitions during the struggle for control of the goldfields. The book is well illustrated, and sixth form pupils should find it fascinating reading. D.L.N.

Kalahari Sand. F. Debenham. 14.25 × 22.25 cm. 190 pp. London : G. Bell and Sons Ltd. 1953. 15/-.

Apart from Passarge's classic work and the volume of Professor Schwarz, literature on the Kalahari is but meagre, and Professor Debenham's book brings welcome information about an area still very little known. It is particularly timely in view of the current project for development of cattle-rearing in the area and indeed this is one of its main themes, for the book is based largely on the author's experiences gained while accompanying an official mission sent to assess the grazing possibilities. These the author believes to be considerable, although all will depend on the availability of underground water, and on this matter, although Professor Debenham is optimistic, expert opinion is divided. *Kalahari Sand* does not, however, merely discuss the cattle scheme, nor is it simply a travel book. Although lightly written it gives a useful review of many wider aspects of the Kalahari, including its history, its peoples and its natural life, and with his intimate style and numerous pen-sketches Professor Debenham conveys the real "feel" of the country admirably. Schools should find his book a valuable addition to the orthodox sober and factual textbooks for information on this little-known tract of Africa.

R.F.P.

Asia : a regional and economic geography. L. D. Stamp. 14.5 × 22 cm. xxi+704 pp. London : Methuen and Co. Ltd. 8th edition. 1953. 35/-.

Since the first edition of Professor Stamp's *Asia* was reviewed in *Geography* (vol. xv, p. 431, 1929-30) it has reached its eighth edition and has increased in size by some ninety pages and some fifty maps and diagrams. Yet the overall plan remains very much as it originally was. For example, Part 1, dealing with the continent as a whole, appears to be almost word-for-word (and map-for-map !) the same as the first edition, there being only four changes, of which the insertion of a short section on climatic classification is only one of any great importance. The chief differences are largely due to the various political changes that have taken place in Asia since 1929. Thus the chapter that used to be "The Indian Empire" has now been split into two—"India and Pakistan" and "Burma." But although reference is made in the regional section to these various changes, all too frequently out-of-date figures for pre-partition India are still quoted. And for Burma it is specifically stated that the "details given refer to the pre-war period" (p. 341). The conclusion is inescapable that, however valuable this work was in the past, it can no longer be brought up-to-date in a piecemeal fashion ; it needs to be entirely re-cast and re-written.

I.S.M.

Asia's Lands and Peoples. G. B. Cressey. 2nd Edition. 19 × 26 cm. x+597 pp. New York : McGraw Hill Book Company. 1951. \$9.76/6. Text book edition, 50/-.

The number of text books in English dealing with the continent of Asia at the VIth Form or College level is very small and when Professor Cressey's book first appeared in 1944 it was a very welcome addition. This second edition is in many ways a new book. The many excellent and well reproduced pictures have been retained and so have the maps but the text has been thoroughly revised throughout. As in the first edition the emphasis is different from that in British texts. As might be expected from Professor Cressey's earlier writings, there is a full and excellent treatment of China, followed by Japan and a likewise full account of the Soviet Union, including European as well as Asiatic territory. By comparison the consideration given to south-western Asia is slight. The former chapter on Syria and Palestine becomes one on the Eastern Mediterranean but there is no separate consideration of Israel. India and Pakistan occupy 90 pages out of 548 but Ceylon receives only one page of text.

Throughout the treatment is well balanced and eminently readable, whilst the admirable and carefully annotated bibliography shows that the author has missed little of importance. The second edition shows one very interesting change from the first ; the "topical" chapters such as "Japan's World Position" and "India's Place in the World" have proved to be ephemeral and have been dropped in favour of a more purely geographical treatment, in line with that more usual in Britain.

In common with all writers on Asia, Cressey finds the kaleidoscopic picture of the present day difficult to present. He used extensively the material in the

Great Soviet World Atlas (1937) and this remains; of necessity the account of Burma must be largely the pre-war picture. Most of the minor errors of the first edition have gone, such as the explanation of the map of Hong Kong, but is the derivation of "Pakistan" correct? It is scarcely accurate to refer to the influx of Madrassi labour into the ricefields of Burma. These are but very small blemishes in a book which one would like to see used in every VIth Form. There comes the trouble—the everlasting gulf between Britain and America, cost. The first edition was \$5.50; this is \$7 for the text book edition or \$9 for the normal. It is magnificently produced but even at the lower price of 50s. it is to most schools quite prohibitive. L.D.S.

The Malayan Journal of Tropical Geography. Vol. 1, October, 1953 and vol. 2, March, 1954. Dept. of Geography, University of Malaya, Singapore, 10. Published twice a year, annual subscription 16/-.

This new journal, of which the first two numbers are noticed here, is a useful addition to geographical literature. As its title clearly indicates, the main interest is on the geography of tropical lands and not unnaturally the emphasis is on Malaya. There is also welcome diversity of topics, no one branch of the subject being dominant. Thus in the first volume there are articles on recent settlement changes in South Malaya, the geography of the Western Region of Nigeria, racial groupings in Singapore, the economic geography of a one-acre farm on Singapore Island, and agricultural education and research in South-East Asia. The second volume contains articles on some ecological aspects of tropical pedology, an irrigation scheme in Perak, recent developments in Nigerian peasant farming, the study of an early Malayan place-name, the banana industry in Taiwan, and the land utilisation of the Insein District in Burma. The journal is well produced, both type and maps being clear, except for a few which have been too greatly reduced in reproduction. I.S.M.

Canada : a story of challenge. J. M. S. Careless. 12.5 × 19 cm. 417 pp. London : Cambridge University Press, Ltd. 1953. 17/6.

Seldom can a supposedly popular history receive such whole-hearted commendation as Prof. Careless's book on Canada deserves. The author describes his theme as the emergence of a Canadian nation out of scattered colonies, in response to the challenge of the vast Canadian land. He does not, however, pay simple lip-service to geography, but emphasises throughout the enormous influence of the frontier, first the west, now the north, without ever expounding that facile determinism which so mars some books on Canada. To a geographer, this book is real history, the story of people in place as well as time; it should be of great value to all students of Canadian geography. A.M.

Marketing Maps of the United States. An Annotated List. Library of Congress, Reference Dept., Map Division. 20.25 × 26 cm. vi+54 pp. Washington : Library of Congress. 1951. 40 cents.

The majority of the maps listed in this catalogue have been compiled within the last ten years by large manufacturing, wholesale and retail companies in the United States. It is difficult to assess the value and accuracy of a map from a list of this kind and the geography teacher will find it only of limited use. However, a judicious selection from certain of the sources mentioned *might* provide useful illustrative material. For example, in addition to maps showing distribution centres and trading areas there are others which show the location of manufacturing plant, quantities of developed power, character of rural areas according to farming prospects and types of rural industry, and the distribution, densities, and occupational character of population. However, some excellent maps published by the Bureau of Agricultural Economics, such as "Generalised Types of Farming in the United States, 1949" and "Major Land Uses in the United States, 1950" are omitted.

The Map Division of the Library of Congress published, during the early decades of this century, several catalogues of the maps and atlases in its possession but, except for a list of United States Atlases (state, county, city and regional) completed in 1950, little of direct interest to the geographer has appeared in recent years. It is to be hoped that further catalogues will be issued in the near future. R.A.G.S.

The Rural Land Classification Programme in Puerto Rico. Evanston: Northwestern University. *Studies in Geography*, Number 1. 21 × 28 cms. vii + 261 pp. Evanston: Northwestern University. 1952. n.p.

The Spanish-speaking West Indian island of Puerto Rico has been a possession of the United States since the Spanish-American war of 1898. With an area of 3,423 square miles, its population of 2,205,000 at the Census of 1950 (three-quarters white), is increasing at the phenomenal rate of 1·8 per cent. per annum. With a population density now of over 650 to the square mile, the Puerto Ricans are mainly peasant farmers with a standard of living, social and material, which is a constant challenge and no little embarrassment to their American rulers. Very great credit is due to the active school of Geography at Northwestern University, Evanston, Illinois under the leadership of Professor Clarence Jones and Dr. Malcolm Proudfoot for initiating a thorough land use survey and inventory. It is based essentially on a careful study of selected pilot areas mapped according to a very detailed scheme which is fully described and then a series of studies on specific areas and topics, mostly undertaken as work for Ph.D. theses and some of which are published in the volume under review. It is work which deserves to be widely known and studied not only because of the interest of the results but also because of the careful exposition of methodology in survey.

L.D.S.

The Geographical Interpretation of Topographical Maps (with accompanying maps: 25 sheets). A. Garnett. 12·5 × 19 cm. 310 pp. London: George G. Harrap & Co. Ltd. 1953. Book 10/6, maps 15/-.

This is a new edition of an already well established book on map interpretation: the main changes arise in connection with the revised series of map extracts which accompany the book in a loose-leaf folder. Twenty five extracts are now reproduced from British and foreign maps and these are extensively used to illustrate the text. For the average student at school or first year University level the convenience of the selection will be much appreciated and should encourage him to turn to other map sheets of interest.

The quality of the map reproductions does not, however, reach that of the originals (Ordnance Survey map extracts might reasonably be expected to attain the standard of those supplied for school examinations) and the cost of the maps purchased separately appears high in comparison with the cost of the book alone.

W.G.V.B.

Regional Geographies. E. O. Robinson. 13·5 × 18·5 cm. Africa xxxvi + 90 pp. 1953. 3/4. Australia and New Zealand, xxxvi + 73 pp. 1953. 3/4. South America, xxxvi + 88 pp. 1953. 3/4. North America, viii + 148 pp. 5/-. London: Macmillan & Co., Ltd. 1954.

This new series of regional textbooks is designed for the use of pupils studying for the Ordinary level of the General Certificate of Education. The southern continents are accorded separate treatment in the first three volumes, although common to each is an introductory chapter of 28 pages concerned with the elementary details of world structure and climate. (This repetition of background material, it is hoped, will give the teacher greater freedom in fitting the books to his syllabus). The volume on North America is intended to link the relatively simple geography of the southern hemisphere with the more difficult studies of Eurasia appropriate to older pupils, and it introduces the concept of air masses in relation to climate with the aid of explanatory maps and diagrams. All four books conform to a similar pattern; the general geography of each continent is followed by more detailed regional studies of the constituent countries. The historical background is sketched in briefly, the main emphasis being placed on modern economic developments. There are, however, no graphs or statistics of production and trade; for these details the author wisely refers his readers to standard works of reference. Three appendices deal respectively with the distribution of population, the construction of statistical diagrams, and exercises grouped according to chapters. The text, largely formal and factual, is supplemented by sketch-maps, diagrams, and full-plate photographs. The captions to a number of the maps instruct the readers to identify the towns, which are marked thereon by initial letters only, but several of these less-familiar places will be missing from the average secondary school atlas. The photographs are a praiseworthy feature of this series, being clear reproductions, related to the text, and obviously selected from refreshingly new sources. These books can be recommended to teachers who wish to ring the changes on existing grammar school geographies.

L.J.J.

ADDITIONS TO THE LIBRARY.

Victoria County Histories.

- Cambridge and the Isle of Ely, vol. iv, R. B. Pugh (ed.), 1953.
 Oxfordshire, vol. iii, H. E. Salter, M. D. Lobel (eds.), 1954.
 Sussex, vol. iv, The Rape of Chichester, L. F. Salzman (ed.), 1953.
 Warwickshire, vol. vi, Knightlow Hundred, L. F. Salzman (ed.), 1951.
 Wiltshire, vol. vii, R. B. Pugh, E. Crittall (eds.), 1953.

Bibliographie Géographique Internationale, under the auspices of the I.G.U. in collaboration with U.N.E.S.C.O. for the years 1945-46, 1947, 1948, and 1949-50.

A Demographic Survey of the British Colonial Empire, vol. iii, The West Indies and American Territories. R. R. Kuczinski for R.I.I.A. Oxford University Press, 1953.

The following books have been received by the Association :—

- B. L. Barrington (ed.). *The Malta Year Book* for 1954. 5s.
 J. M. Berrisford. *Son of Darcy*. Far and Wide Stories, No. 3. Macmillan and Co., 1953.
 E. A. Boateng. *To-morrow's Map of West Africa*. West African Affairs No. 13. Staples Press Ltd. 1953. 9d.
 Canada. Dept. of Mines and Technical Surveys, Geogr. Branch. *Bibliography of periodical literature on Canadian geography, 1940-50*. 1952.
 V. Chapman. Open Fields in West Cheshire. *Trans. of the Hist. Soc. of Lancs. and Cheshire*, vol. 104, 1952.
 Commonwealth Economic Committee. *Commonwealth Trade in 1951*. H.M.S.O. 1952. 1s.
 Commonwealth Economic Committee. *Summaries of figures of production, trade and consumption* relating to Meat (1950, 1951, 1952, 1953), Vegetable Oils and Oilseeds (1950), Dairy Produce (1951, 1952, 1953), Grain Crops (1952), Plantation Crops (1952, 1953). H.M.S.O., 5s. each.
 County Borough of Southport, Meteorological Dept. *Fernley Observatory, Southport. Reports and results of observations, 1942-45, 1947, 1948*. G. A. Lidster, Meteorologist.
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 K. C. Edwards. *A Survey of the Chesterfield Region*. Chesterfield Regional Planning Committee. 1949.
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 International Geographical Union. *Comptes rendues du Congrès International de Géographie, Lisbonne, 1949*. Tome II, Sections II (Géographie physique) and III (Biogéographie).
 A. E. Kirkby. *Humberstone. The Story of a Village*. Lincs. Chronicle. 1954. 17s. 6d.
 P. Lake. *Physical Geography*, 3rd edition revised and enlarged, by J. A. Steers, G. Manley, and W. V. Lewis. Cambridge University Press, 1952. 17s. 6d.
 Trevor Lloyd. *The Norwegian-Soviet Boundary*. A study in political geography. Dartmouth College, Hanover, Mass., U.S.A. 1954.
 Netherlands Government Information Service. *Dutch Agriculture : Facts*. 1953. *The Netherlands 1952. Political and economic life*. 1953. The Hague.
 Scientific Council for Africa south of the Sahara. Publication No. 4. *Maps of Africa south of the Sahara*. 1953. 3s. Copies available from Dr. R. Harrison Church, London School of Economics, London.
 L. E. Seltzer (ed.). *The Colombia Lippincott Gazetteer of the World*. (x + 2,148 pp.) Columbia Univ. Press (London : Geoffrey Cumberlege). 1952. £16.
 Shropshire County Council. *A Guide to Shropshire Records*. 1952.
 H. Thorpe. *The City of Lichfield*. Reprinted from *Staffs. Historical Collections*, 1950-51.
 W. H. K. Turner. The Textile Industry of Arbroath since the early 18th century. *Abertay Hist. Soc. Publ.* No. 2. 1954.
 U.N.E.S.C.O. *History, Geography and Social Studies*. A summary of school programmes in 53 countries. 1953. 7s. 6d.
 University of Chicago. *Research papers in Geography*. Nos. 1 to 30. Full titles will be supplied on request. Chicago, Illinois. 1948-1953. \$3 each.

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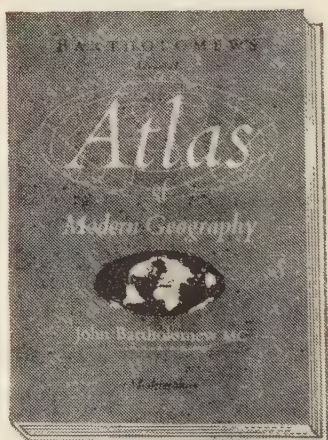
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Geographical Articles in Magazines Received.

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Journals listed here may be borrowed from the Library by members of the Association. References are listed according to the classification published in the *Annals of the Association of American Geographers*, Vol. xxvii, June, 1937.

A of G—Annals of the Association of American Geographers. A of Sc—The Advancement of Science. AUUS—Annales Universitatis Mariae Curie-Skłodowska (Lublin). BGB—Bulletin de la Société de Géographie de Beograd. CGR—Geographical Review of India (formerly Calcutta Geog. Rev.). EG—Economic Geography. GA—Geografiska Annaler. GJ—Geographical Journal. GR—Geographical Review. GS—Geographical Studies. GSI—Bulletin of the Geographical Society of Ireland. IBG—Transactions and Papers of the Institute of British Geographers. IGJ—Indian Geographical Journal (formerly Journal of the Madras Geog. Assoc.). J of G—Journal of Geography. LS(H)—Lund Studies (Human). MSSG—Mémoires de la Société Serbe de Géographie. PG—Przegląd Geograficzny: Polish Geographical Review (Warsaw). PGA—Proceedings of the Geologists' Association. PGR—Pakistan Geographical Review. REC—Révue pour l'Etude des Calamités. RGA—Révue de Géographie Alpine. RGI—Revista Geografica Italiana. SAJ—South African Geographical Journal. SGA—Svensk Geografisk Årsbok. SGM—Scottish Geographical Magazine. SR—Sociological Review. T—Terra. TPR—Town Planning Review. UE—United Empire.

(E)—English Summary. (F)—French Summary. (G)—German Summary.
*—Map

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